THE Journal of the Kansas Medical Society

MARCH
1961

VOL LXII
NO III

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BENADRYL Hydrochloride (diphenhydramine hydrochloride, Parke-Davis). Kapseals® of 50 mg.; Capsules of 25 mg.; Emplets® (enteric-coated tablets) of 50 mg.; in aqueous solutions: 1-cc. Ampoules, 50 mg. per cc.; 10- and 30-cc. Steri-Vials,® 10 mg. per cc. with 1:10,000 benzethonium chloride as a germicidal agent; Elixir, 10 mg. per 4 cc.; 2% Ointment (water-miscible base); Kapseals of 50 mg. BENADRYL HCl with 25 mg. ephedrine sulfate. INDICATIONS: Allergic diseases such as hay fever, allergic rhinitis, urticaria, angioedema, bronchial asthma, serum sickness, atopic dermatitis, contact dermatitis, gastrointestinal allergy, vasomotor rhinitis, physical allergies, and allergic transfusion reactions, also postoperative nausea and vomiting, motion sickness, parkinsonism, and quieting emotionally disturbed children. Parenteral administration is indicated where, in the judgment of the physician, prompt action is necessary and oral therapy would be inadequate. DOSAGE: Oral—adults, 25 to 50 mg. three or four times daily. Children, 1 or 2 teaspoonfuls of Elixir three or four times daily. Parenteral—10 to 50 mg. intravenously or deeply intramuscularly, not to exceed 400 mg. daily. High doses may be required in acute, generalized or chronic urticaria, allergic eczema, bronchial asthma, and status asthmaticus. PRECAUTION: Avoid subcutaneous or perivascular injection. Single parenteral dosage greater than 100 mg. should be avoided, particularly in hypertension and cardiac disease. Products containing BENADRYL should be used cautiously with hypnotics or other sedatives; if atropine-like effects are undesirable; or if the patient engages in activities requiring alertness or rapid, accurate response (such as driving). Ointment or Cream should not be applied to extensively denuded or weeping skin areas. Preparations containing ephedrine are subject to the same contraindications applicable to ephedrine alone.

when allergy looms large in the life of your patient...

relieves the symptoms of food allergy When the allergic patient can't resist eating an offending food, the ensuing punishment is often out of all proportion to the nature of the "crime." In such cases, BENADRYL provides a twofold therapeutic approach to the management of distressing symptoms.

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BENADRYL®

antihistaminic-antispasmodic

cuts most allergens down to size!

Volume LXII, Number 3—March, 1961

The JOURNAL of the KANSAS MEDICAL SOCIETY

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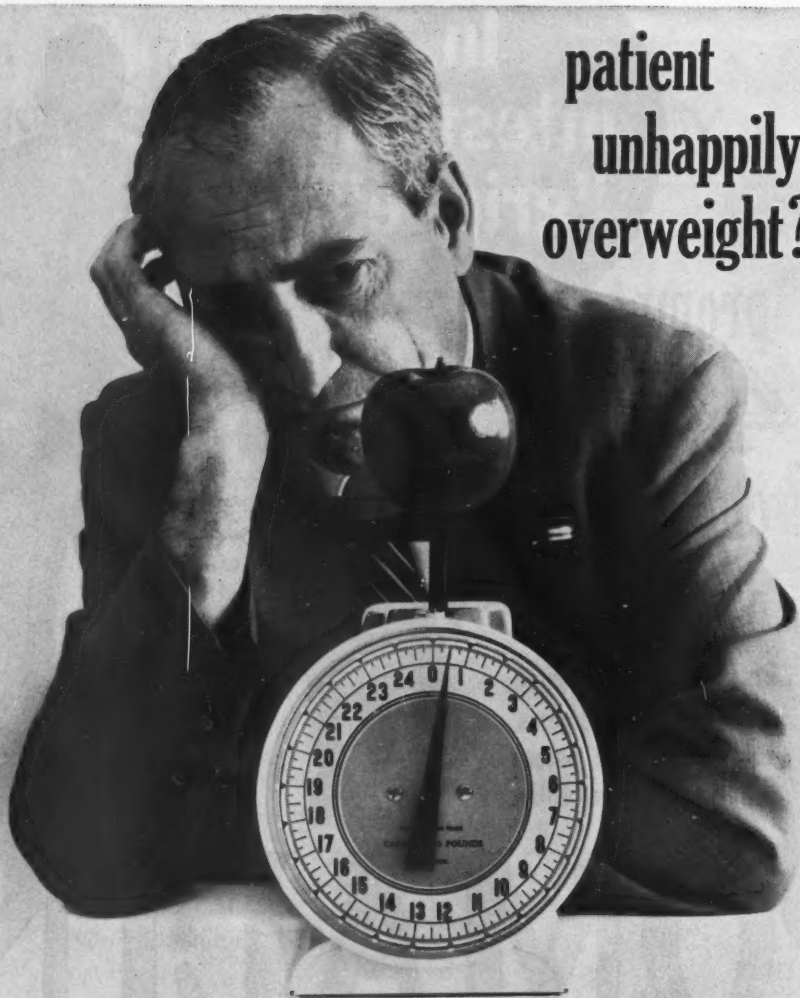

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[1] Douglas, H. S.: West. J. Surg. 59:238 (May) 1951.

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AN ENTIRELY NEW SYNTHETIC
"STAPH-CIDAL" PENICILLIN

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sodium dimethoxyphenyl penicillin
FOR INJECTION

UNIQUE—BECAUSE IT
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ACTIVITY IN THE PRESENCE OF
STAPHYLOCOCCAL PENICILLINASES
WHICH INACTIVATE
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OFFICIAL PACKAGE CIRCULAR
November, 1960

STAPHCILLIN™

(sodium dimethoxyphenyl penicillin)

For Injection

DESCRIPTION

STAPHCILLIN is a unique new synthetic parenteral penicillin produced by Bristol Laboratories for the specific treatment of staphylococcal infections due to resistant organisms. Its uniqueness resides in its property of resisting inactivation by staphylococcal penicillinase. It is active against strains of staphylococci which are resistant to other penicillins.

Each dry filled vial contains: 1 Gm. STAPHCILLIN (sodium dimethoxyphenyl penicillin), equivalent to 900 mg. dimethoxyphenyl penicillin activity.

INDICATIONS

STAPHCILLIN is recommended as specific therapy only in infections due to strains of staphylococci resistant to other penicillins, e.g.:

Skin and soft tissue infections: cellulitis, wound infections, carbuncles, pyoderma, furunculosis, lymphangitis and lymphadenitis.

Respiratory infections: staphylococcal lobar or bronchopneumonia, and lung abscesses combined with indicated surgical treatment.

Other infections: staphylococcal septicemia, bacteremia, acute or subacute endocarditis, acute osteomyelitis and enterocolitis.

Infections due to penicillin-sensitive staphylococci, streptococci, pneumococci and gonococci should be treated with Syncillin® or parenteral penicillin G rather than STAPHCILLIN. Treponemal infections should be treated with parenteral penicillin G.

DOSAGE AND ADMINISTRATION

STAPHCILLIN is well tolerated when given by deep intragluteal or intravenous injection.

As is the case with other antibiotics, the duration of therapy should be determined by the clinical and bacteriological response of the patient. Therapy should be continued for at least 48 hours after the patient has become afebrile, asymptomatic and cultures are negative. The usual duration has been 5-7 days.

Intramuscular route: The usual adult dose is 1 Gm. every 4 or 6 hours. Infants' and children's dosage is 25 mg. per Kg. (approximately 12 mg. per pound) every 6 hours.

Intravenous route: 1 Gm. every 6 hours using 50 ml. of sterile saline solution at the rate of 10 ml. per minute.

**Warning:* Solutions of STAPHCILLIN and kanamycin should not be mixed, as they rapidly inactivate each other. Data on the results of mixing STAPHCILLIN with other antibiotics are being accumulated.

DIRECTIONS FOR RECONSTITUTION

Add 1.5 ml. sterile distilled water or normal saline to a 1 Gm. vial and shake vigorously. Withdraw the clear, reconstituted solution (2.0 ml.) into a syringe and inject. The reconstituted solution contains 500 mg. of STAPHCILLIN per ml. Reconstituted solutions are stable for 24 hours under refrigeration.

For intravenous use, dilute the reconstituted dose in 50 ml. of sterile saline and inject at the rate of 10 ml. per minute.

*This statement supersedes that in the Official Package Circulars dated September and/or October, 1960.

(continued)

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MICROBIOLOGICAL AND PHARMACOLOGICAL PROPERTIES

In vitro studies show that STAPHCILLIN is a bactericidal penicillin with activity against staphylococci resistant to penicillin G. Strains of staphylococci so far tested have been sensitive to STAPHCILLIN *in vitro* at concentrations of 1-6 mcg. per ml. These levels are readily attained in the blood and tissues by administration of STAPHCILLIN at the recommended dosage. This unique attribute is probably due to the fact that STAPHCILLIN is stable in the presence of staphylococcal penicillinase. STAPHCILLIN also resists degradation by *B. cereus* penicillinase. The antimicrobial spectrum of STAPHCILLIN with regard to other microorganisms is qualitatively similar to that of penicillin G; but considerably higher concentrations of STAPHCILLIN are required for bactericidal activity than is the case with penicillin G.

STAPHCILLIN is rapidly absorbed after intramuscular injection. Peak blood levels (6-10 mcg./ml. on the average after a 1.0 Gm. dose) are attained within 1 hour; and then progressively decline to less than 1 mcg. over a 4 to 6 hour period. It is poorly absorbed from the gastrointestinal tract. STAPHCILLIN is rapidly excreted by the kidney.

As shown by animal studies, STAPHCILLIN is readily distributed in body tissues after intramuscular injection. Of the tissues studied, highest concentrations are reached in the kidney, liver, heart and lung in that order; the spleen and muscles show lower concentrations of the antibiotic. STAPHCILLIN diffuses into human pleural and prostatic fluids, but its diffusion into the spinal fluid has not yet been completely studied. However, one patient with meningitis showed a significant concentration in his spinal fluid while on STAPHCILLIN therapy.

Toxicity studies with STAPHCILLIN and penicillin G in animals show that they have approximately the same low order of toxicity.

Certain staphylococci can be made resistant to STAPHCILLIN in the laboratory, but this resistance is not related to their penicillinase production. During the clinical trials, no STAPHCILLIN-resistant strains of staphylococci were observed or developed; the possibility of the emergence of such strains in the clinical setting awaits further observation.

PRECAUTIONS

During the clinical trials, several mild skin reactions, e.g., itching, papular eruption and erythema were observed both during and after discontinuance of STAPHCILLIN therapy. Patients with histories of hay fever, asthma, urticaria and previous sensitivity to penicillin are more likely to react adversely to the penicillins. It is important that the possibility of penicillin anaphylaxis be kept in mind. Epinephrine and the usual adjuvants (antihistamines, corticosteroids) should be available for emergency treatment. Because of the resistance of STAPHCILLIN to destruction by penicillinase, parenteral *B. cereus* penicillinase may not be effective for the treatment of allergic reactions. Information with regard to cross-allergenicity between penicillin G, penicillin V, phenethicillin (Syncillin) and STAPHCILLIN is not available at present. If superinfection due to Gram-negative organisms or fungi occurs during STAPHCILLIN therapy, appropriate measures should be taken.

SUPPLY

List 79502 — 1.0 Gm. dry filled vial.

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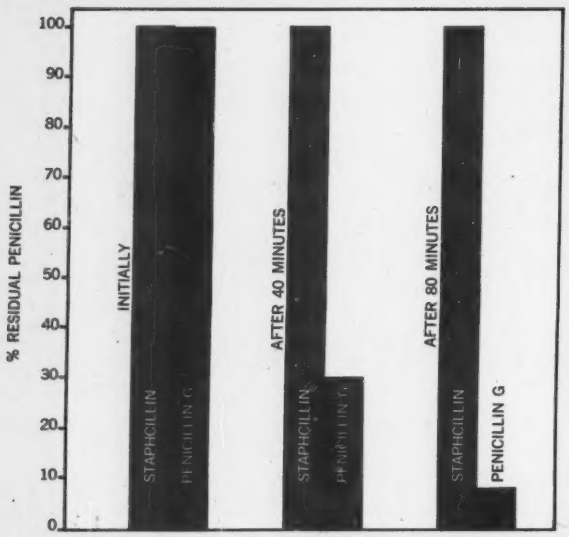

In the presence of staphylococcal penicillinase, STAPHCILLIN remained active and retained its antibacterial action. By contrast, penicillin G was rapidly destroyed in the same period of time. *(After Gourevitch et al., to be published)*

Specifically for "resistant" staph...

Staphcillin™

sodium dimethoxyphenyl penicillin
FOR INJECTION

The failure of staphylococcal infections to respond to penicillin therapy is attributed to the penicillin-destroying enzyme, penicillinase, produced by the invading staphylococcus.

Unlike other penicillins:

1 STAPHCILLIN is effective because it retains its antibacterial activity despite the presence of staphylococcal penicillinase.

2 The clinical effectiveness of STAPHCILLIN has been confirmed by dramatic results in a wide variety of infections due to "resistant" staphylococci, many of which were serious and life-threatening.

Like other penicillins:

STAPHCILLIN has no significant systemic toxicity. It is well tolerated locally, and pain or irritation at the injection site is comparable to that following the injection of penicillin G. *In occasional cases, typical penicillin reactions may be experienced.*

PROFESSIONAL INFORMATION SERVICE – The attached Official Package Circular provides complete information on the indications, dosage, and precautions for the use of STAPHCILLIN. If you desire additional information concerning clinical experiences with STAPHCILLIN, the Medical Department of Bristol Laboratories is at your service. You may direct your inquiries via collect telephone call to New York, PLaza 7-7061, or by mail to Medical Department, Bristol Laboratories, 630 Fifth Ave., N. Y. 20, N. Y.

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1. Barden, F. W., et al.: J. Maine M. A. 46:99, 1955.
2. Ford, R. A., and Blanchard, K.: Journal-Lancet 78:185, 1958.

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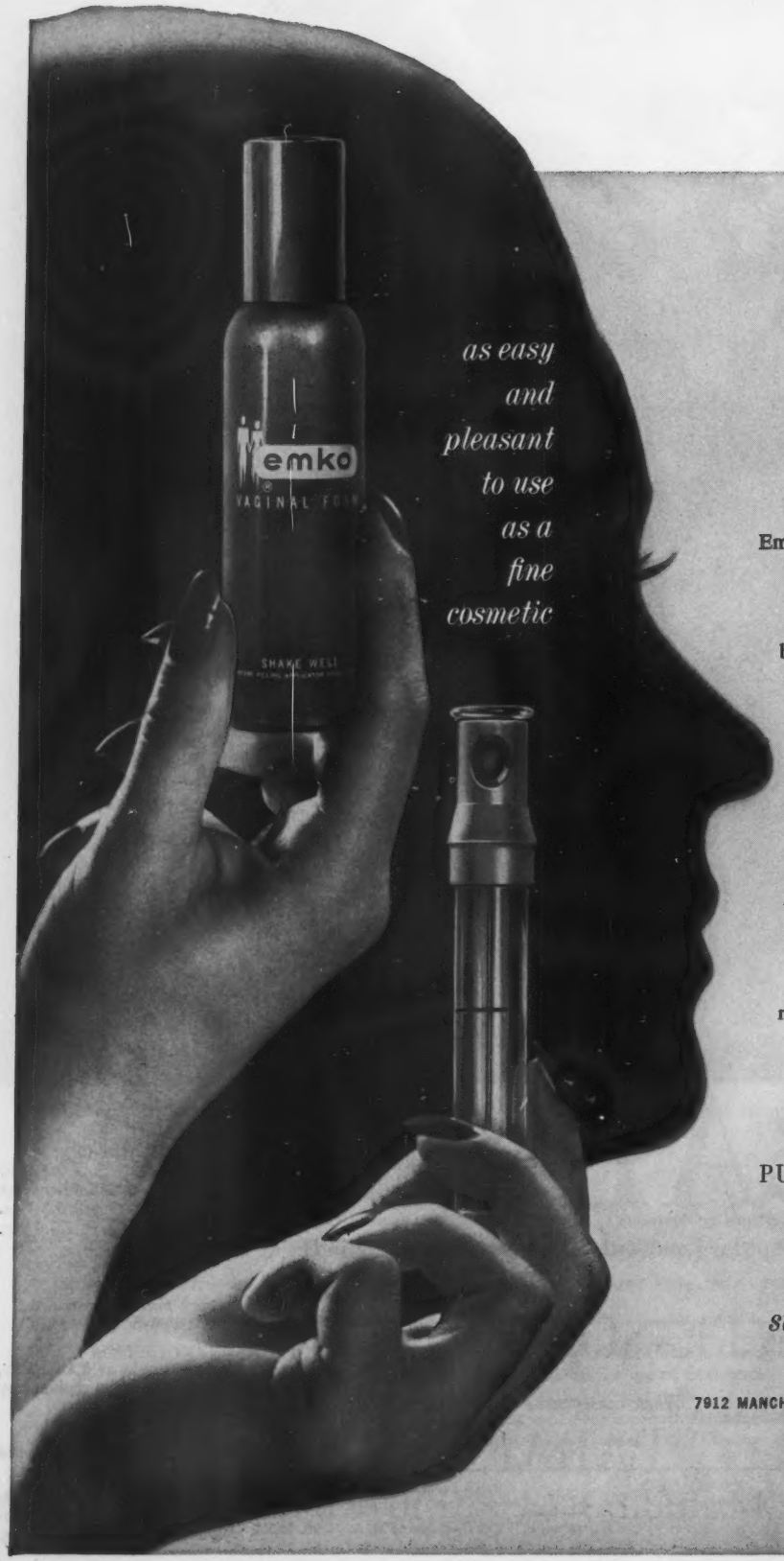

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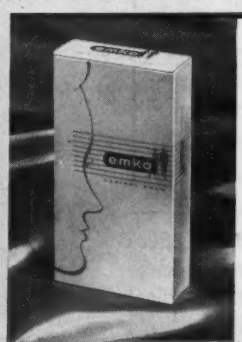

MARGARET SANGER RESEARCH BUREAU

INTERIM REPORT

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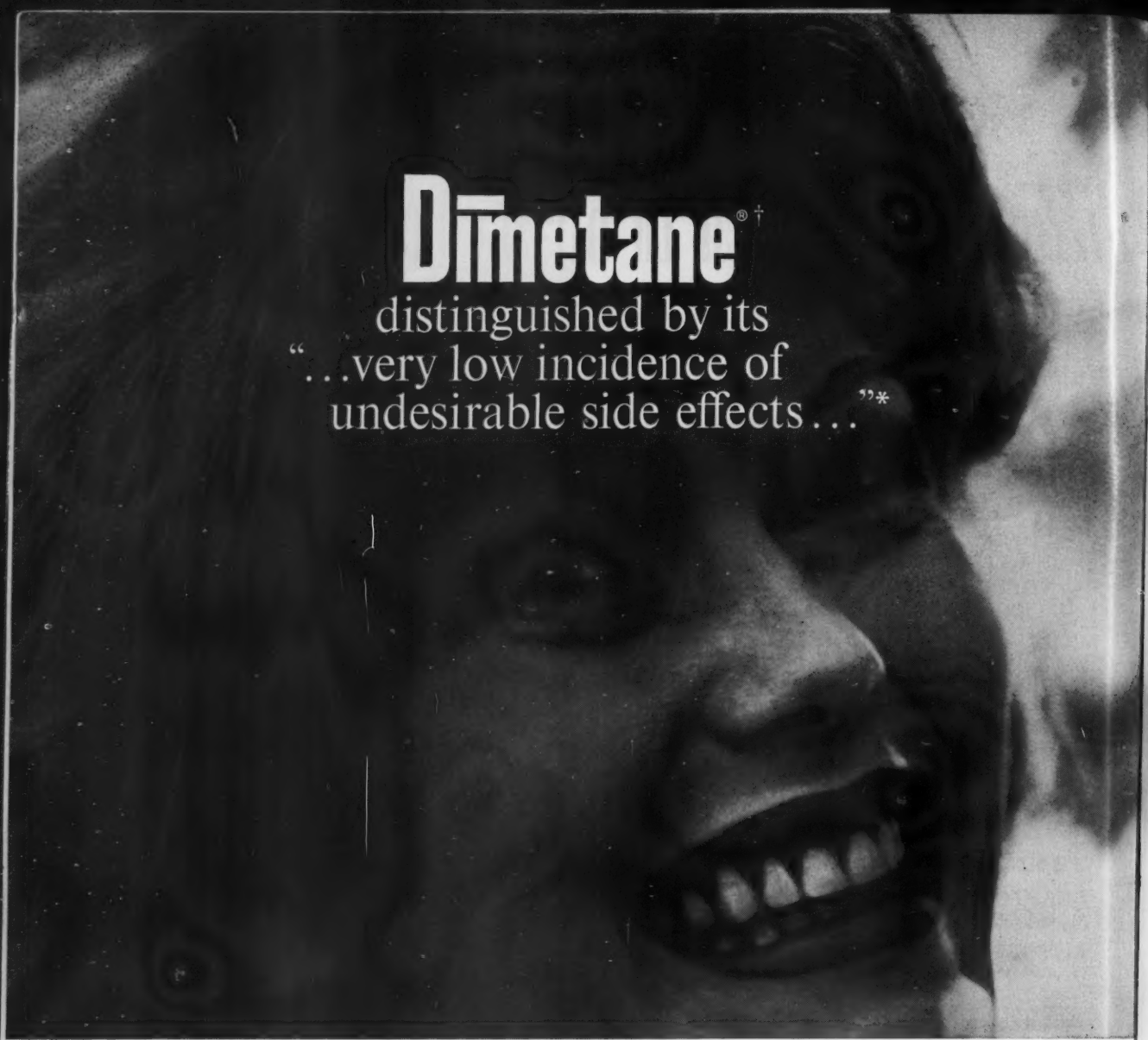
A. J. SOBRERO, M.D. *Research Director*



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*MC GOVERN, J. P., MC ELHENNEY, T. R., HALL, T. R., AND BURDON, K. D.: ANNALS OF ALLERGY 17:918, 1959.

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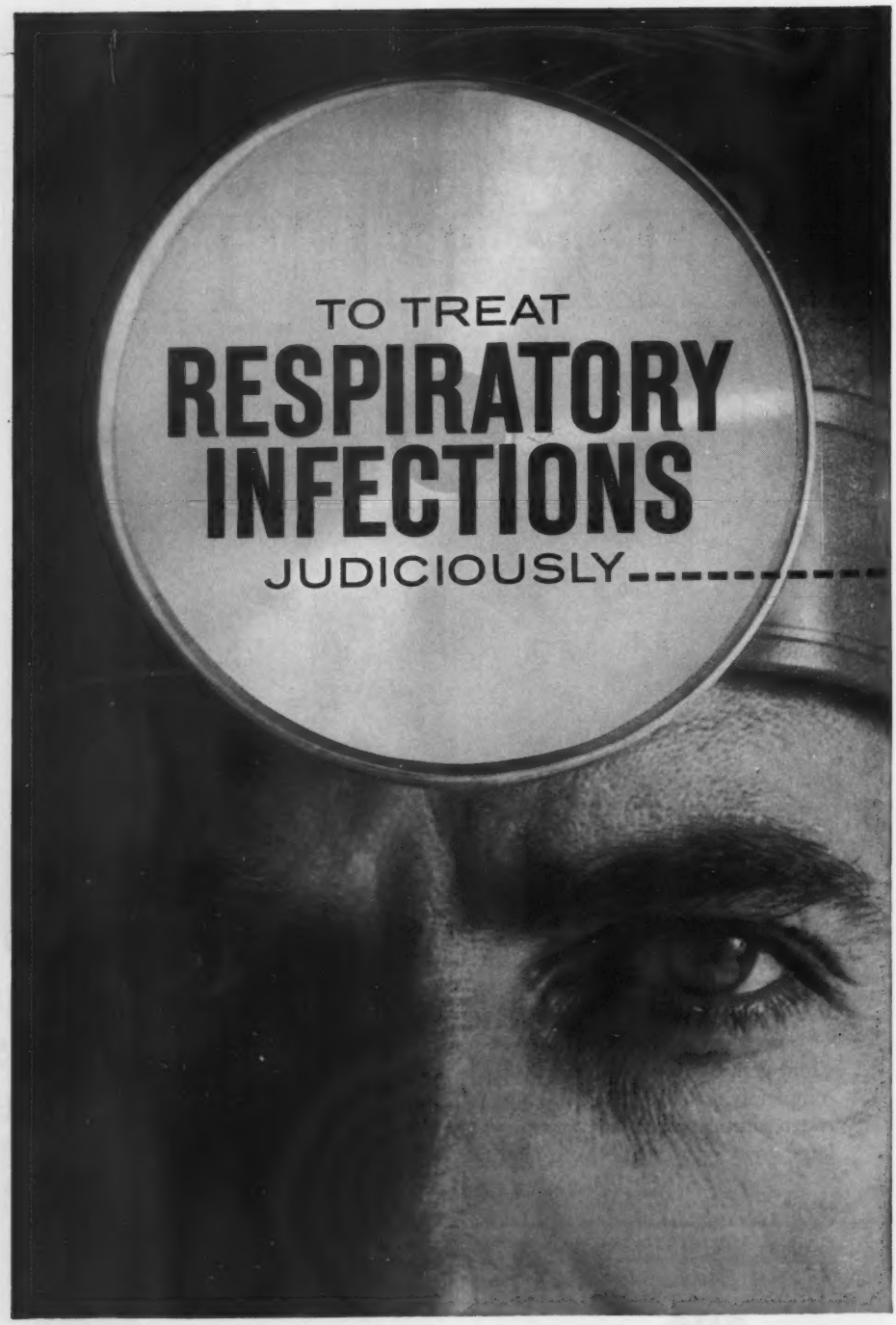
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(eg. possible bacterial resistance or allergic patient)

You can count on

TAO®

triacetyloleandomycin

Extends the Gram-positive spectrum of usefulness to include many staphylococci resistant to one or more of the commonly used antibiotics—*narrows* the spectrum of side effects by avoiding many allergic reactions and changes in intestinal bacterial balance.

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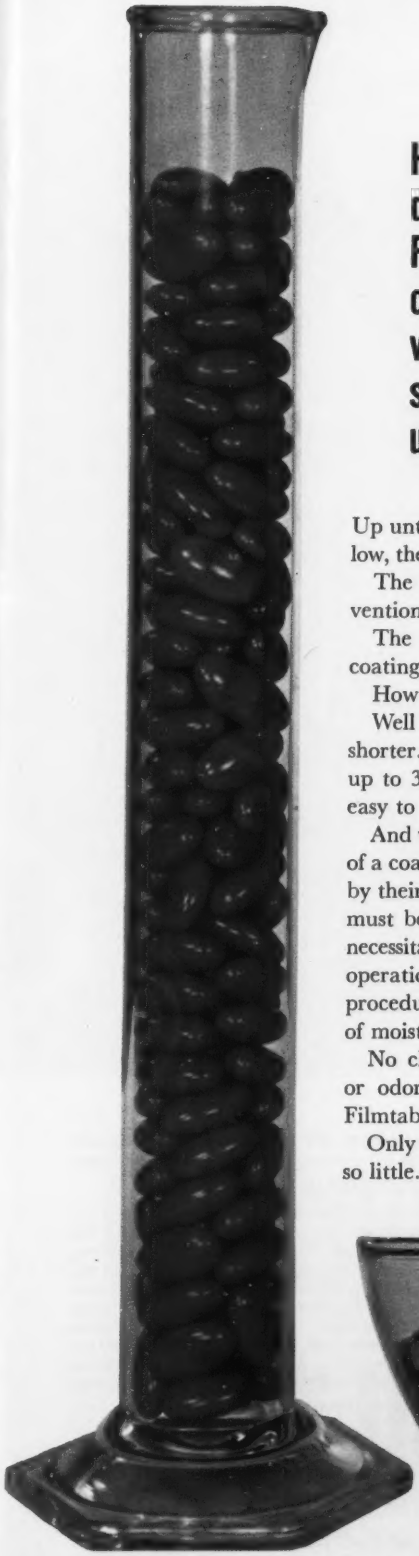

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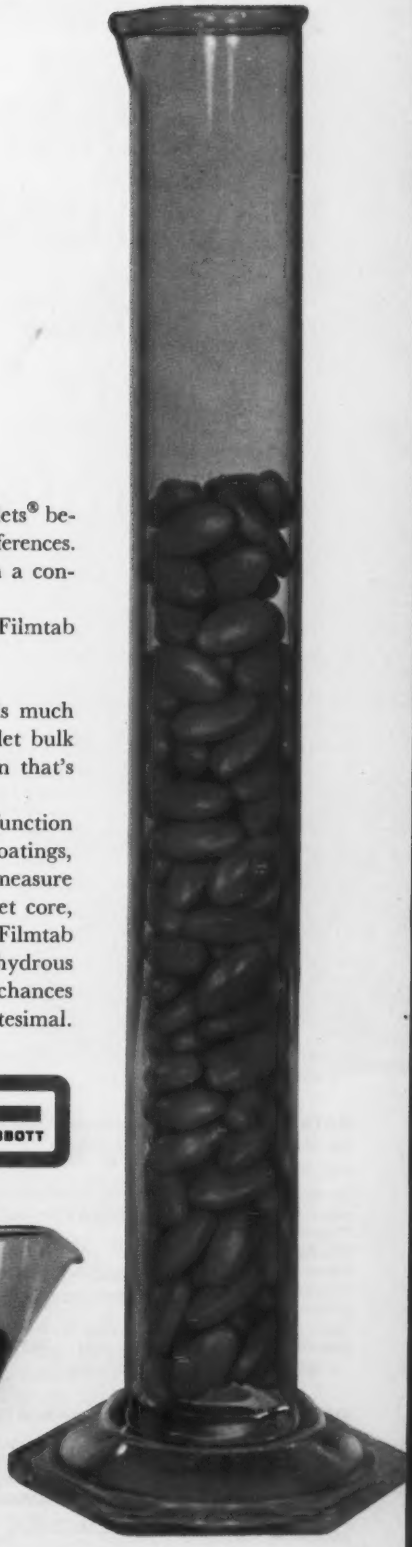
ABBOTT



Filmtab—Film-sealed Tablets, Abbott.

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Thiamine Mononitrate (B_1)	2 mg.
Riboflavin (B_2)	2 mg.
Nicotinamide	20 mg.
Pyridoxine Hydrochloride	0.5 mg.
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Calcium Pantothenate	5 mg.
Ascorbic Acid (C)	50 mg.
Iron (as sulfate)	10 mg.
Copper (as sulfate)	0.15 mg.
Iodine (as calcium iodate)	0.1 mg.
Manganese (as sulfate)	0.05 mg.
Magnesium (as oxide)	0.15 mg.
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Each Filmtab® represents:

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Nicotinamide	25 mg.
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Cobalamin (Vitamin B_{12})	2 mcg.
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Iodine (as calcium iodate)	0.15 mg.
Cobalt (as sulfate)	0.1 mg.
Manganese (as sulfate)	1 mg.
Magnesium (as oxide)	5 mg.
Zinc (as sulfate)	1.5 mg.
Molybdenum (as sodium molybdate)	0.2 mg.

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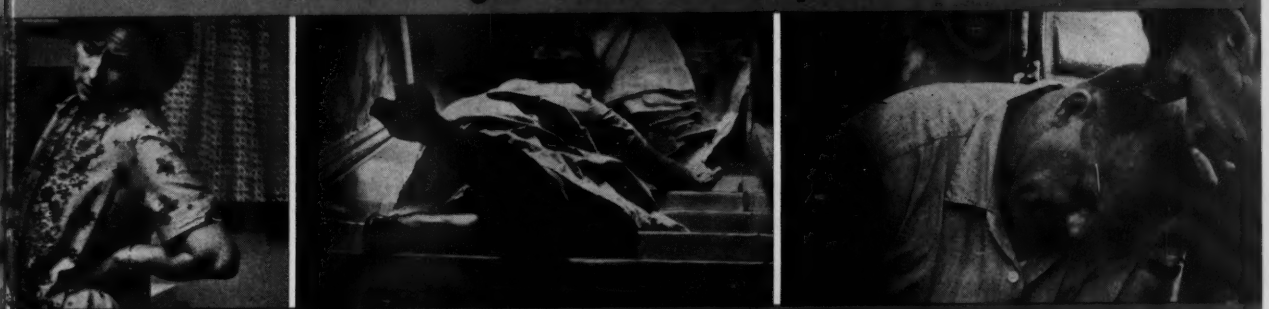

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"nutrition...present as a modifying or complicating factor in nearly every illness or disease state"[1]

1. Youmans, J. B.: Am. J. Med. 25:659 (Nov.) 1958

cardiac diseases "Who can say, for example, whether the patient chronically ill with myocardial failure may not have a poorer myocardium because of a moderate deficiency in the vitamin B-complex? Something is known of the relationship of vitamin C to the intercellular ground substance and repair of tissues. One may speculate upon the effects of a deficiency of this vitamin, short of scurvy, upon the tissues in chronic disease."[2] 2. Kampmeier, R. H.: Am. J. Med. 25:662 (Nov.) 1958.

arthritis "It is our practice to prescribe a multiple vitamin preparation to patients with rheumatoid arthritis simply to insure nutritional adequacy . . ."[3]
3. Fernandez-Herlihy, L: Lahey Clinic Bull. 11:12 (July-Sept.) 1958.

digestive diseases Symptoms attributable to B-vitamin deficiency are commonly observed in patients on peptic ulcer diets.[4] Daily administration of therapeutic vitamins to patients with hepatitis and cirrhosis is recommended by the National Research Council.[5] 4. Sebrell, W. H.: Am. J. Med. 25:673 (Nov.) 1958. 5. Pollack, H., and Halpern, S. L.: Therapeutic Nutrition, National Academy of Sciences and National Research Council, Washington, D. C., 1952, p. 57.

degenerative diseases "Studies by Wexberg, Jolliffe and others have indicated that many of the symptoms attributed in the past to senility or to cerebral arteriosclerosis seem to respond with remarkable speed to the administration of vitamins, particularly niacin and ascorbic acid. These facts indicate that the vitamin reserve of aging persons is lowered, even to the danger point, more than is the case in the average American adult."[6] 6. Overholser, W., and Fong, T.C.C. in Stieglitz, E. J.: Geriatric Medicine, 3rd edition, J. B. Lippincott, Philadelphia, 1954, p. 264.

infectious diseases Infections cause a lowering of ascorbic acid levels in the plasma; and the absorption of this vitamin is reduced in diarrheal states.[7] 7. Goldsmith, G A.: Conference on Vitamin C. The New York Academy of Sciences, New York City, Oct. 7 and 8, 1960. Reported in: Medical Science 8:772 (Dec.10) 1960.

diabetes Diabetics, like all patients on restricted diets, require an extra source of vitamins.[8] "Rigidly limiting the bread intake of the diabetic patient automatically eliminates a large amount of thiamin from the diet. . . . There is some evidence of interference with normal riboflavin utilization during catabolic episodes."[9]
8. Duncan G. G.: Diseases of Metabolism 4th edition W. B. Saunders, Philadelphia, 1959, p. 812. 9. Pollack, H.: Am. J. Med. 25:708 (Nov.) 1958.

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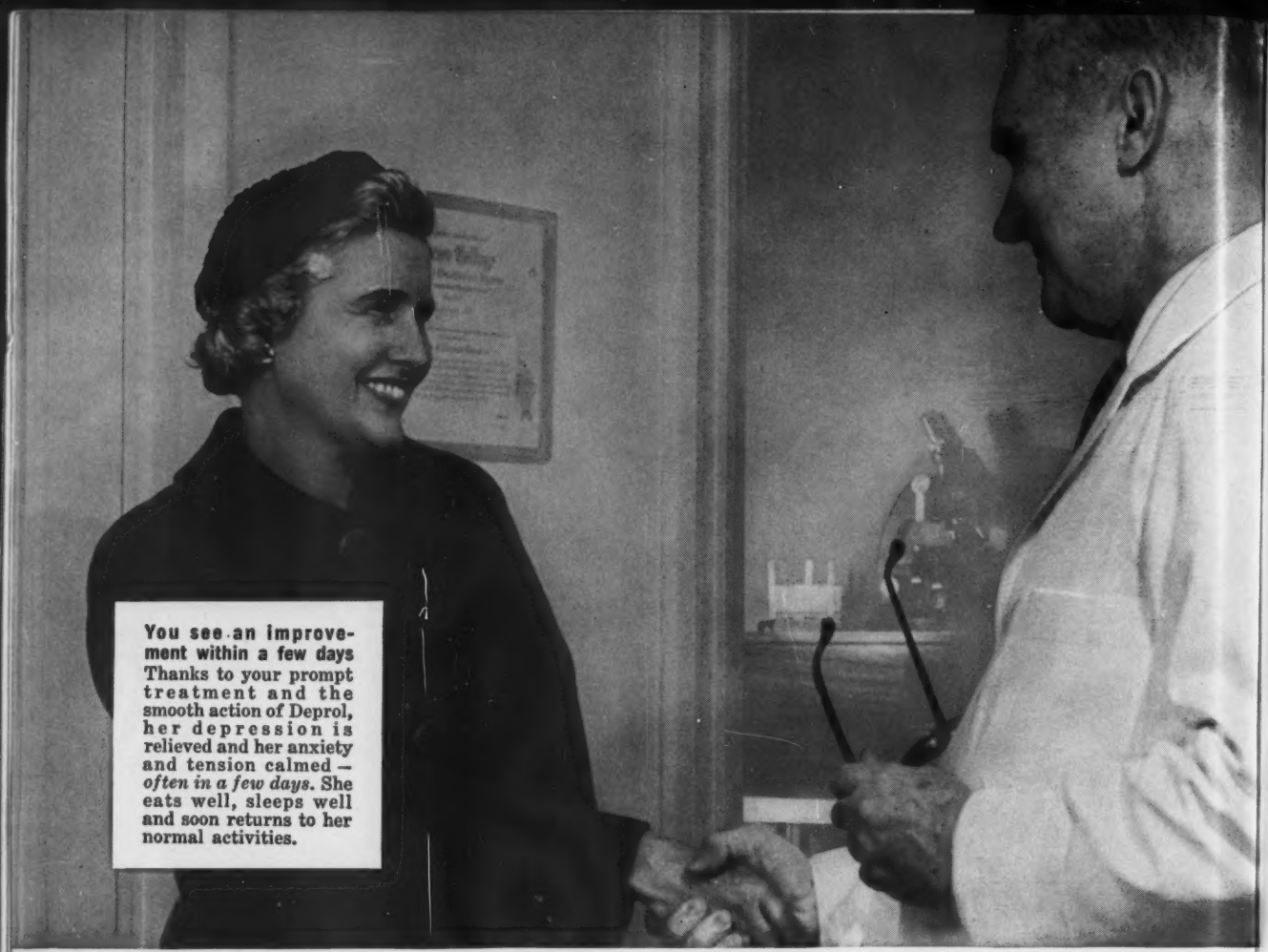
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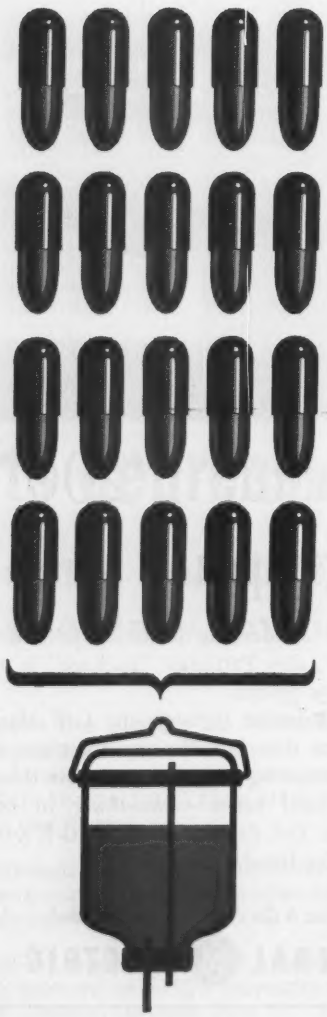

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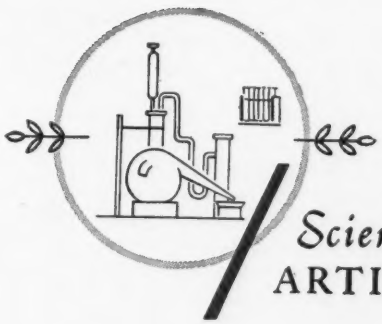

Scientific
ARTICLES

Response to a "Crisis"

A Report from the Dean of the University of Kansas Medical Center

IN THIS ISSUE OF THE JOURNAL, devoted by tradition to articles from the Medical School, the new Dean might most appropriately present a statement on the status of the school: its changes in personnel, its successes in education and research, its problems, its plans for growth, and its needs. He might especially present any personal views which could be reflected in altered programs of the school and variations in patterns of operation. He certainly should be mindful of the tremendous interest the physicians of Kansas have in these matters. This Medical School has been conspicuous in the nation for the harmony which has existed between the school and the physicians of the state. We know this harmony has worked to the advantage of the school in terms of support for its programs; we believe it has also worked to the advantage of medicine in Kansas through the development of one of the world's most successful programs in continuation education.

Our medical school has had changes in personnel, successes in programs of research and education; we have some problems, we have many plans for growth, and we have needs. We especially have plans for new buildings which will expand and improve medical education in Kansas. Some new buildings will accommodate acute needs such as those for out-patient teaching; others will accommodate chronic needs, such as housing for students, and laboratories. Most of all we have a continuing need for interested and supportive colleagues throughout the state.

During the past six months I have been privileged to meet with many local medical societies. At these meetings most of the items above have been discussed in detail. The physicians of Kansas have given a most gracious welcome. I receive this gratefully as a tribute to the past successes of gifted predecessors and colleagues. I recognize it also as encouragement for continued success of the medical school. I have become dean with all the advantages of a successful program, a superb staff, and an enlightened state. I accept the responsibilities with humility and with a pledge to serve well these advantages.

Perhaps with this background I may be permitted to deviate from the usual progress report in order to discuss issues which are vital and immediate to our medical school and our state but which are more general in nature, and possibly more important, than buildings and promotions. They are issues which involve all of us in medicine whether as teachers, students, or practitioners. In some measure all of us fill all of these roles and we have a common concern for issues affecting them.

At a recent medical meeting, a speaker commented that medicine, like a pretty woman, prefers to be admired than talked about. This observation, implying the sins of pride and complacency, can be added to others that appear almost weekly in popular periodicals, dissecting medical science, practice, and education. Our professional organizations, ethics, education, motives, politics, and incomes are openly reviewed and criticized; we are favorite subjects for those expert satirical editorialists, the cartoonists; analysis of our services is copy for a spate of monographs and reports issued by foundations and public agencies. If we do, in fact, resent the light of publicity on medical affairs, then we have ample cause for resentment. Medicine is being talked about; questions are being asked of us. Attitudes of defensiveness and resentment will not suffice for

answers. They provide only a climate for non-medical planners to provide answers for us.

The common theme to much commentary is that the world is changing and medical institutions in this country are not changing with it. We are, in fact, accused of resisting change in favor of a status quo which may offer advantages to the profession, possibly at the expense of the best possible medical care to the public. No wonder resentment and defensiveness bristle! What changes medicine has undergone in fifty years.

Reflecting only on those aspects with which I have greatest familiarity, I see tremendous changes in preparation for the profession. The development of medical schools as a part of university education; internships and residencies; specialty boards; continuation education; all of these have been developed within the past fifty years. Other changes have been more subtle: the shifting locus of practice from the home to the office and increasingly to the hospital; the growth of group practice and indeed the reluctance of recent graduates to enter "solo" practice; the recent preponderance of prepayment plans for health services; increasing specialism; and the astonishing advances in our understanding and therapy of disease.

These indeed are changes; they are changes brought about largely by the profession itself in an effort to bring the best that is known about medical care to all persons in need of it. We may question the wisdom of some of these changes, and we may question their present adequacy, but we cannot question the fact that staggering changes have occurred in the education of physicians and in their patterns of service.

We may be rightfully proud of our professional heritage. We perhaps need to recognize increasingly that this heritage was developed by courageous forebears in medicine who displayed more than flexibility to external pressures: they exercised leadership to discard what was no longer helpful; to preserve what was of proven value; and to modify, sometimes by bold strokes and sometimes by subtle shadings, the entire picture of medicine. We are obligated to society, to our profession, and to our successors in medicine to develop a heritage as rich as ours has been. These comments should not be construed as advocacy for discarding traditional values in medical practice. I advocate only that we study ourselves as carefully as others are studying us. If we find problems, we may well develop through our professional organizations some solutions which are more sensible than those of our critics.

A recent issue of *Harper's Magazine* will illustrate some problems which concern us. A special supplement entitled "The Crisis in American Medicine" presents eight articles dealing with medical education and practice. One of these claims that the politics of organized medicine is an obstacle to urgently needed reforms (not well formulated) in health services; another asserts that physicians are lacking in compassion and devotion to public interest; a third laments that medical science has prolonged human life but has not sufficiently relieved suffering by means of "death control"; a fourth advocates one curriculum in medical schools for the family doctor, and a different one for the medical scientist; a fifth, by a physician, urges a return to concern for the ill, and reform of professional attitudes toward politics, money, and social status; another asserts that vast sums of money are being misspent in the name of medical research; the seventh describes a new role for hospitals in health services; the last article depicts modern medicine as a powerful and luxurious ocean liner with no course and little mechanism for control, poorly prepared to cope with new threats to health in the twentieth century.

There is much to disagree with in these articles; there is even more to reflect on. We make a mistake to ignore them. We may claim that medicine, like the church, is an anvil that has broken many a hammer. Can we feel that secure? These hammers may influence public action on medical matters more dramatically than can our well staffed societies and expensive lobbies. We are familiar with the militant liberal of the thirties and forties, who loved mankind but disliked people. Are we now facing an influential and articulate society which respects the doctor but mistrusts the profession? Our efforts on behalf of a healthy society will be weakened by such mistrust.

In reading these critiques and listening to others I have pondered the role of the university in studying the issues. Some problems are clearly in the lap of the medical school. I feel, for example, that Kansas abounds with evidence that our curriculum trains many and competent family doctors. With regard to research, I share the concern over its means of support, but I must protect its role in medical education as a device for teaching students to learn from their own observations, surely a talent as necessary for family practice as for any other medical endeavor.

What of the other issues raised under the banner, "The Crisis in American Medicine"? Are these pertinent to medical education? I'm not sure. The issues are sensitive; they arouse strong feelings and their study may damage popularity. We are a medical school for Kansas and we must have strong popular support. We may, however, do less than enough if we seek only to be popular.

Let me close these commentaries with a question. Are these broader issues of medicine as appropriate for our study as genetics, metabolism, or chemotherapy? Your colleagues in the university have no answers or preconceived notions about the issues. Our

(Continued on page 86)

The Clinical Traineeship

Intensive, Participative and Personalized Postgraduate Training

JESSE D. RISING, M.D.

ALMOST EVERY WEEK some eager physician volunteers in a spirit of helpfulness that the postgraduate refresher courses are fine, but it would be wonderful if there were opportunities for practicing physicians to come back to the Medical Center to get on-the-job training especially designed to fulfill their personal needs. The fact is that such programs are available, and have been for years. Since relatively few Kansans are aware of this phase of our activities, it seems appropriate, in this KUMC number of the JOURNAL, to discuss the Clinical Traineeship and describe how it fits into the total program of continuing medical education.

The Clinical Traineeship may be defined as a period of intensive, personalized, participative education for a physician who arranges to leave his practice for a period of time to re-enter a teaching hospital for advanced training designed to meet his specific needs. The time involved may vary from one week to one year—more often one to six months. Generally speaking the clinical trainee takes part in ward work, rounds, clinics and conferences in much the same way that a resident does except that he has more control over the content of his training program and he is not obligated to certain service duties such as routine night call and the like.

Ever since the beginnings of the medical profession it seems to have been the custom for physicians, when they felt the need to increase their competence in one field or another, to leave their own practices and seek more education as students of other physicians or in medical teaching institutions. In the recent past it was common for physicians in this country to go to European clinics or universities for postgraduate training before attempting more specialized types of practice. More recently such training has been increasingly available in this country, and foreigners are now seeking our shores.

Formal graduate medical education (the residency) leading to specialty certification has in the past 25 years dominated the field of intensive, participative training, and has so far taken the emphasis from the informal and more personalized type of training that the latter has been largely neglected and ignored. In spite of this the need has continued to exist and some physicians have all along sought and found more or less satisfactory solutions to their educational problems. Vollan[1] pointed out some of the advantages of family physicians' taking work to develop "part-time" specialist skills. No one suggests that such postgraduate courses should replace formal graduate training, but they have some obvious advantages that it would be unfortunate to lose by permitting them to be submerged by the formal specialty programs.

At least as important as the acquiring of new skills and techniques is the not-so-simple matter of keeping up with the pace of medical progress in one's own field. This need is acutely felt by all thoughtful physicians—generalists and specialists alike—and by paramedical groups as shown by the phenomenal nation-wide support of postgraduate programs in the past fifteen years. The backbone of these programs has been the largely didactic "refresher" course which has had an enormous impact on medical practice and has obviously satisfied an urgent need; but educators and students alike have recognized the deficiences of predominately passive methods of education. The Council on Medical Education and Hospitals[2] summarized this concern after an extensive review of educational methods: "There is ample evidence . . . that overemphasis on purely didactic methods provides an educational program that is inferior to one requiring active participation."

Some degree of participation of the enrollees has been secured in the better refresher courses by such devices as panel discussions with open question periods, live clinics, discussion groups ("clinical conversations"), ward rounds and laboratory "workshops." The very nature of such programs makes sustained participation by the individual enrollee difficult if not impossible.

The Clinical Traineeship is designed to complement the traditional postgraduate refresher courses by making available to physicians, technicians and nurses a training program that emphasizes active participation by the enrollee in the study and care of patients or in the work of the clinical laboratory.

In an informal way such training has been available at KUMC for some time, probably ever since the medical school was established, but it was not until 1949 that an organized effort was launched by the Department of Postgraduate Medical Education as "In-Residence Training." In 1955 some of the traineeships were given formal structure, and in 1957 the name officially became "Clinical Traineeship."

In spite of the relative obscurity of the program,

Department of Postgraduate Medical Education, University of Kansas School of Medicine.

acceptance has been good. Enrollments will never, of course, rival those of the refresher courses, but this is not a valid criterion of the value of the Clinical Traineeship which offers a maximum degree of education and training to a relatively few enrollees. Traineeships have been offered by the various clinical departments through the Postgraduate Department for eleven years, and a total of 81 enrollees have been served. It is of some interest that 19 of these were from 12 foreign countries (Table I).

Annual enrollment has varied from two in 1950 to 15 in 1960. The latter figure includes four medical technologists who took the traineeship in Exfoliative Cytology, first offered in 1959.

A wide variety of traineeships are now available (Table II), and more are being planned. In most cases these traineeships are purposely flexible so that the enrollee may select, with the advice of the chief of the service involved, that program which will best satisfy his requirements. Certain activities are, however, scheduled by each service for its personnel, and this provides a basic structure for the Clinical Traineeship which it offers.

As it becomes better known, and as programs are developed in all fields where a need exists, the Clinical Traineeship is undoubtedly destined to be an increasingly important part of continuing medical education. This should be true not only for physicians but for all members of the health team. Each year many mothers who have been nurses or technicians return to part-time work in these fields, and others who have reared their families resume full-time professional work. These constitute a group that is vitally needed for adequate care of the nation's health, but most of them can not function at their full potential until they can catch up with developments in their profession. For them the Clinical Traineeship appears to be an ideal program.

Little known though it is, the Clinical Traineeship has filled an important niche in continuing education for physicians and for other members of the health team. As its advantages are recognized and exploited it is destined to become an increasingly popular form of postgraduate work.

TABLE I

COUNTRIES FROM WHICH TRAINEES HAVE BEEN ENROLLED

Country	*Enrollees*
Afganistan	1
Brazil	1
China (Taiwan)	3
Germany	1
India	4
Indonesia	1
Japan	2
Pakistan	2
Paraguay	1
Spain	1
Thailand	1
Turkey	1
United States	62

TABLE II

CLINICAL TRAINEESHIPS OFFERED AND THEIR DURATION

Anesthesiology	(1 week to 1 year)
Cardiology	(9 months)
Cardiovascular Disease	(1 month)
Gastroenterology	(1 month)
Hematology	(1 month)
Medical Technology	
Program A	(6 months)
Program B	(2 weeks to 2 months)
Microbiology	(12 months)
Clinical Chemistry	(12 months)
Exfoliative Cytology	(6 months)
Microbiology	(3 to 9 months)
Nursing Service and Supervision	(open)
Obstetrics and Gynecology	(open)
Ophthalmology	(open)
Otorhinolaryngology	(open)
Pathology	(6 to 12 months)
Pediatrics	(1 month and up)
Physical Medicine and Rehabilitation	(3 weeks to 6 months)
Psychiatry	(3, 6, 9, or 12 months)
Pulmonary Disease	(1 month)

References

1. Vollan, Douglas D.: "Postgraduate Medical Education in the United States." Chicago, American Medical Association, 1955, p 69.

2. The Council on Medical Education and Hospitals: "A Guide Regarding Objectives and Basic Principles of Postgraduate Medical Education Programs." Chicago, American Medical Association, 1957.

Response to a "Crisis"

(Continued from page 84)

concern is no different from yours. In the free atmosphere of inquiry in the university, we are prepared to provide study, not answers. A major link between you and your university is our program in continuation education. Is it desirable or appropriate that we engage with you through this device in the study of a suggested "Crisis in American Medicine" as a joint project with your Kansas Medical Society?

C. Arden Miller, M.D., Dean
The University of Kansas School of Medicine

Physician Distribution

A Kansas, 1960 Follow-up Study

E. V. THIEHOFF, M.D., *Kansas City*

A SURVEY OF THE DISTRIBUTION of physicians in Kansas was made by the author in 1955.[1] Because the problem of uneven distribution of physicians still exists, it was decided to make a follow-up study five years later. The variation in distribution of physicians is not a permanent one as many changes in the location of physicians occur each month in the state. Using the 1955 survey as a base line or point of reference, the present survey has been made to determine what changes have occurred in the distribution of physicians in Kansas.

The present study was made with the cooperation of the Kansas State Board of Healing Arts. Only doctors of medicine and surgery, who are duly licensed and registered to practice in Kansas, were included. Doctors of osteopathy and doctors of chiropractic were not included.

In the collection of data reference was made to:

American Medical Association Directory. 20th ed. 1958.

Directory of Medical Specialists. Volume 9, 1959.

Roster of Kansas Physicians. January, 1959 (also monthly supplements).

Medical, Health and Related Facilities of Greater Kansas City. Ten County Edition. 1960-61. Compiled by the Jackson County Medical Society.

Roster of Wyandotte County Medical Society. 1960.

The Medical Bulletin. Sedgwick County Medical Society. Volume 30, 1960.

"Population of Kansas, March 1, 1960, as reported by County Assessors" was used in assigning population figures to various counties and cities. This was issued by the Kansas State Board of Agriculture.

Since the previous survey was closed as of October, 1955, so this survey was made as of October, 1960. Again, only physicians who maintain offices in Kansas were considered as Kansas physicians.

Physicians Licensed in Kansas

Physicians are licensed to practice in the state by:

1. Examination—Those who pass an examination assembled and administered by the Kansas State Board of Healing Arts.
2. Endorsement—Those who have been licensed in other states and have met the Board's requirements for reciprocity.

A Board of Basic Science was established by a law passed in 1957. This law requires that applicants for licensing shall have certificates of ability in anatomy, chemistry, physiology, bacteriology and pathology, the same to be issued by the Board of Basic Science Examiners. Since 1958, those taking the examination for licensing are required to complete a year of internship before certificates of licensure are issued.

Table I gives the number of physicians who have been licensed in Kansas each year for the past five years. In that period 819 have been licensed, or an average of 164 per year. In the preceding 20 years (1935-54) an average of 153 had been licensed each year. So this represents an increase in the average number of physicians licensed per year over the past five years. However, there was a decided drop in the number licensed in 1958. This was the year that the Basic Science Law became effective. This was followed by an increase in 1959. In 1958 there were 27 licenses and in 1959 there were 31 licenses withheld for completion of the internship.

TABLE I

NUMBER OF PRACTITIONERS LICENSED IN KANSAS BY YEAR (1955-59 INCLUSIVE)

	1955	*1956*	*1957*	*1958*	*1959*
Examination	141	122	143	5	62
Endorsement	69	50	80	31	58
Failures			1		2
Withheld for Internship				27	31
Total Licensed	210	172	223	63	151

Table II shows that as of October, 1960, there were 2,382 doctors of medicine resident and licensed to practice in Kansas, as compared with 2,340 in October, 1955. In 1960, 81.99 per cent of the physicians in Kansas were in active practice, while in October, 1955, there were 81.15 per cent in active practice. There was an increase in the number of interns and residents in Kansas hospitals. In 1955 there were 299 interns and residents, representing 12.78 per cent of the physicians in the state, as compared with 343 in 1960, or 14.40 per cent of the total physicians. There

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TABLE II

DOCTORS OF MEDICINE LICENSED TO PRACTICE IN KANSAS OCTOBER, 1955 AND OCTOBER, 1960

Status of Practice	*1955* NO.	*1955* %	*1960* NO.	*1960* %
Active Practice	1,899	81.15	1,953	81.99
Interns and Residents	299	12.78	343	14.40
Absent—in Military Service	76	3.25	68	2.86
Retired	66	2.82	18	0.75
Total	2,340	100.00	2,382	100.00

TABLE III

DISTRIBUTION BY AGE GROUPS—DOCTORS OF MEDICINE IN KANSAS OCTOBER, 1955 AND OCTOBER, 1960

Age Groups—Years	*1955* NO.	*1955* %	*1960* NO.	*1960* %
Under 30	239	10.21	248	10.41
30-39	763	32.61	754	31.65
40-49	478	20.43	583	24.48
50-59	298	12.73	359	15.07
60-69	220	9.40	194	8.14
70-79	248	10.60	169	7.10
80 and over	94	4.02	75	3.15
Total	2,340	100.00	2,382	100.00

were eight fewer physicians in military service in 1960 than in 1955 and there was a drop from 66 to 18 in the number of retired physicians. Thus, in 1960 the services of 3.61 per cent of Kansas physicians were not available either because they were in military service or had retired. In 1955 the percentage was 6.07. Included in the list of physicians in active practice are a few who are not providing direct patient care but are doing research, teaching, public health work, etc.

In 1955, with a total population of 2,050,478, the ratio of persons per physician in Kansas was 876. In 1960, with an increase in population to 2,130,579, the ratio was 894.4 persons per physician.

Table III gives the calculation of age distribution of physicians in Kansas in October, 1955 as compared with physicians in October, 1960.

There have been some variations in the distribution of physicians in the various age groups in 1960 as compared with 1955. Again the number of physicians under 30 years of age is disproportionately high since it includes those young physicians who are serving as interns or residents in Kansas hospitals. Between 30 and 59 years of age is considered to be the most effective in the individual's practice. In 1955, 65.77 per cent of the physicians in Kansas was in this age group. In 1960 the percentage had increased to 71.20. In 1955 it was found that 24.02 per cent of Kansas physicians were 60 years of age or older. In 1960 this percentage had dropped to 18.39 per cent.

The mean or average age for all physicians in Kansas in 1955 was 47 years. This figure was obtained by adding the ages of all the physicians and dividing by the number of physicians. In 1960 the average age of physicians in the state was 46 years.

Table IV shows the relationship between the age of physicians and the size of the communities in which they practice.

In 1960 there has been a small increase in the total number of physicians practicing in both large and small communities and a decrease in those located in

TABLE IV

DISTRIBUTION OF DOCTORS BY AGE AND SIZE OF COMMUNITY IN KANSAS IN OCTOBER, 1955 AND OCTOBER, 1960

Size of Community	*1955 Age in Years* 39 AND UNDER	40 TO 59	60 AND OVER	ALL AGES	*1960 Age in Years* 39 AND UNDER	40 TO 59	60 AND OVER	ALL AGES
Large*	609	354	193	1,156	634	284	303	1,221
Intermediate†	234	300	193	727	212	188	260	660
Small‡	160	122	175	457	156	111	234	501
Total	1,003	776	561	2,340	1,002	583	797	2,382

* Over 30,000 population
† Between 5,000 and 30,000 population
‡ Less than 5,000 population

TABLE V

AGE DISTRIBUTION OF PHYSICIANS BY PRINCIPAL CITIES
OCTOBER, 1955 AND OCTOBER, 1960

Age Group in Years	*Principal Cities* KANSAS CITY 1955	1960	TOPEKA 1955	1960	WICHITA 1955	1960	*Remainder of State* 1955	1960	*Total* 1955	1960
Under 30	78	92	55	43	56	52	50	61	239	248
30-39	135	150	108	103	144	136	376	365	763	754
40-49	66	61	74	81	84	118	254	323	478	583
50-59	35	43	24	39	41	60	198	217	298	359
60-69	24	21	19	12	31	29	146	132	220	194
70-79	10	15	19	10	27	23	192	121	248	169
80 and over	9	3	13	3	8	6	64	63	94	75
Total	357	385	312	291	391	424	1,280	1,282	2,340	2,382

communities of intermediate size, as compared with the number of physicians in communities of similar size in 1955. In the age group 39 years of age and under, the great number of physicians located in large communities is weighted by the fact that many of them are interns and residents who must take their service in hospitals located in large communities. This number was greater in 1960 than in 1955. In 1960 there are more physicians 60 years of age and over, and fewer in the younger age groups, practicing in the small communities of Kansas than there were in 1955. This may indicate that there are now fewer young men going to the smaller communities to practice than there were in previous years.

Kansas has three principal cities, Kansas City, Topeka, and Wichita. In order to determine whether these cities receive medical service from physicians of a younger age than does the remainder of the state, the data were broken down and analyzed as to the age of physicians practicing in the three cities, with physicians practicing in all other parts of the state being pooled into a fourth group. Table V shows the results of analysis made on this basis, comparing the 1960 analysis with that made in 1955.

In 1960, as in 1955, there are more young physicians under 30 years of age in Kansas City than in the other two cities. This may be accounted for by the number of young physicians in internship and residency training at the University of Kansas Medical Center. To lessen the influence of the presence of interns and residents on age distribution, let us compare the principal cities as to the proportion of physicians who are 30 to 59 years of age to physicians of all ages. Of Kansas City's physicians, 66 per cent are in the 30 to 59 age group in 1960, which is the same as it was in 1955. In the other two cities, as well as in the remainder of the state, the proportion of physicians in this age group in 1960 has increased over that in 1955. The percentage in Topeka has increased from 66 per cent in 1955 to 77 per cent in 1960 and in Wichita it has increased from 68 per cent in 1955 to 74 per cent in 1960. For the rest of the state the percentage has increased from 64 per cent in 1955 to 72 per cent in 1960.

Kansas Graduates in Practice in the State

It is of interest to assess what the contribution of the University of Kansas School of Medicine has been to the ranks of physicians practicing in the state. In former years there were some other schools of medicine in Kansas, but these have gone out of existence, the last in 1913. However, there are a few of the older physicians remaining in the state who were graduates of these schools.

From Table VI we see that of the physicians now in Kansas there remain only 23 physicians who graduated from former schools which are no longer in existence in the state, as compared with 56 who were still alive in 1955. It is apparent that there are still more physicians in Kansas in 1960 who graduated from out-of-state schools as was the case in 1955. However, the percentage of the University of Kansas

TABLE VI

MEDICAL SCHOOL OF GRADUATION
PHYSICIANS IN KANSAS
1955 AND 1960

School	*1955* NO.	%	*1960* NO.	%
University of Kansas .	957	40.90	1,110	46.60
Other Kansas Schools .	56	2.39	23	0.97
Out-of-State Schools ..	1,327	56.71	1,249	52.43
Total	2,340	100.00	2,382	100.00

TABLE VII
DISTRIBUTION OF PHYSICIANS BY SCHOOL OF GRADUATION AND STATUS OF ACTIVITY OF PRACTICE IN 1955 AND 1960

Activity of Practice	Kansas University 1955 NO.	%	1960 NO.	%	Other Kansas Schools 1955 NO.	%	1960 NO.	%	Out of State Schools 1955 NO.	%	1960 NO.	%	1955 Total	1960 Total
Retired	4	0.4	3	0.2	7	12.5	4	17.4	55	4.2	11	0.8	66	18
Military Service .	54	5.6	53	4.8	0	0	0	0	22	1.6	15	1.2	76	68
Active Practice .	899	94.0	1,054	95.0	49	87.5	19	82.6	1,250	94.2	1,223	98.0	2,198	2,296
Total	957	100	1,110	100	56	100	23	100	1,327	100	1,249	100	2,340	2,382

graduates in the state has increased from 40.90 per cent in 1955 to 46.60 per cent in 1960.

Table VII shows that, regardless of school of graduation, physicians in Kansas are, of course, predominantly in active practice. Of the Kansas physicians who are in military service in 1960, 78 per cent are graduates of the University of Kansas. In 1955 there were 71 per cent of the physicians in military services who were graduates of Kansas University. On the other hand, a smaller percentage of physicians in the state who are retired are Kansas University graduates than was the case in 1955.

Let us next give consideration to the age distribution of Kansas physicians by school of graduation.

In Table VIII we see that in actual numbers in 1960 there are 855 physicians under 50 years of age who graduated from Kansas University as compared with 730 physicians in the same age group who graduated from out-of-state schools. This is a difference of 125. In 1955 there were 758 Kansas University graduates in this age group as compared with 722 graduates from out-of-state schools, or a difference of 36. In 1960 we find that 77 per cent of Kansas University graduates in the state are under 50 years of age, whereas in 1955 there was 79 per cent in this age group. Likewise, in 1960 there are 58 per cent of the graduates from out-of-state schools in Kansas who are under 50 years of age, while in 1955 there was 54 per cent in that group. So the percentage of physicians under 50 years of age has dropped in both the Kansas University graduates and in the out-of-state school graduates.

Table IX shows that, of the Kansas University graduates practicing in the state, 45.59 per cent are in large communities in 1960. This compares with 44.72 per cent in 1955. Among the doctors in the state who graduated from out-of-state schools, 56.69 per cent are located in the large communities. This compares with 53.05 per cent who were in large communities in 1955. A higher percentage of doctors graduating from out-of-state schools go to large com-

TABLE VIII
DISTRIBUTION OF KANSAS PHYSICIANS BY SCHOOL OF GRADUATION AND BY AGE IN 1955 AND 1960

	Number of Physicians							
	KANSAS UNIVERSITY		OTHER KANSAS SCHOOLS		OUT OF STATE SCHOOLS		Total	
Age in Years	1955	1960	1955	1960	1955	1960	1955	1960
Under 30	106	138	0	0	133	110	239	248
30-39	420	400	0	0	343	354	763	754
40-49	232	317	0	0	246	266	478	583
50-59	119	160	0	0	179	199	298	359
60-69	59	64	11	1	150	129	220	194
70-79	19	26	33	15	196	128	248	169
80 and over	2	5	12	7	80	63	94	75
Total	957	1,110	56	23	1,327	1,249	2,340	2,382

TABLE IX

DISTRIBUTION OF PHYSICIANS BY SCHOOL OF GRADUATION AND BY SIZE OF COMMUNITY

Size of Community	*K.U.* NO.	%	*Other Kansas Schools* NO.	%	*Out of State Schools* NO.	%	*Total* NO.	%
Large	506	45.59	7	30.44	708	56.69	1,221	51.26
Intermediate	329	29.64	7	30.44	324	25.94	660	27.71
Small	275	24.77	9	39.12	217	17.37	501	21.03
Total	1,110	100.00	23	100.00	1,249	100.00	2,382	100.00

munities than of those graduating from the University of Kansas School of Medicine.

In 1960, of all doctors located in the large communities of Kansas, 41.44 per cent are graduates of the University of Kansas, while 57.98 per cent are graduates of out-of-state schools. This compares with 37.03 per cent Kansas University men and 60.90 per cent out-of-state graduates in large communities in 1955.

In 1960, in the small communities we see that 54.89 per cent of the physicians came from Kansas University, while 43.31 per cent came from out-of-state medical schools. In 1955 the ratio was 45.30 per cent Kansas University men and 50.76 per cent out-of-state graduates. So in 1960 the percentage of physicians in small communities who are Kansas University graduates has increased.

TABLE X

DISTRIBUTION OF PHYSICIANS BY SPECIALIZATION

Status as to Specialty	*1955* NO.	%	*1960* NO.	%
Certified	378	16.15	430	18.05
Non-Certified	570	24.36	274	11.50
General Practice	1,392	59.49	1,678	70.45
Total	2,340	100.00	2,382	100.00

Specialization of Kansas Physicians

Attention should be given to the relative distribution of the services of specialists and general practitioners. For this purpose, physicians have been divided into three categories:

1. Certified specialists
2. Non-certified specialists
3. General practitioners

In 1960 we find that 29.55 per cent of Kansas physicians are classed as specialists, as compared with 40.51 per cent in 1955. The percentage of certified specialists has increased from 16.15 per cent in 1955 to 18.05 per cent in 1960. There were 59.49 per cent of the physicians in the state in general practice in 1955, while in 1960 we find that 70.45 per cent are in that category. So in 1960, while there is an increase in the number of physicians in general practice,

TABLE XI

DISTRIBUTION OF PHYSICIANS BY SIZE OF COMMUNITY

Number of Physicians

Size of Community	*Specialty* CERTIFIED 1955	1960	NON-CERTIFIED 1955	1960	*General Practice* 1955	1960	*Total* 1955	1960
Large	294	318	412	166	450	737	1,156	1,221
Intermediate	75	99	129	75	523	486	727	660
Small	9	13	29	33	419	455	457	501
Total	378	430	570	274	1,392	1,678	2,340	2,382

TABLE XII

DISTRIBUTION OF PHYSICIANS BY PRINCIPAL CITIES IN 1955 AND 1960

	Number of Physicians							
	Specialty							
	CERTIFIED		NON-CERTIFIED		*General Practice*		*Total*	
Place	1955	1960	1955	1960	1955	1960	1955	1960
Kansas City	82	90	147	34	128	262	357	385
Topeka	86	85	121	16	105	190	312	291
Wichita	102	120	137	113	152	193	391	425
Rest of State	108	135	165	111	1,007	1,033	1,280	1,279
Total	378	430	570	274	1,392	1,678	2,340	2,382

there has also been an increase in the number of certified specialists.

In 1960, as in 1955, the specialists are predominantly in the larger cities. This is not surprising, as the larger the city, the more specialists there are to be expected.

Let us look at the distribution of physicians in the three principal cities of Kansas, with the rest of the state being pooled into a fourth category.

Table XII shows that Wichita has the largest number of specialized physicians in both the certified group and the non-certified group. The total is 233 specialists. Kansas City ranks second with 124 specialists, and Topeka is third with 101 specialists. There are 246 specialists outside of these cities and in the rest of the state. Thus, there is a total of 704 specialists in the state in 1960 as compared with 948 in 1955. This is a decrease of 244 specialists in the state since 1955.

The most effective age range in the practice of medicine has been set at 30 to 59 years. In 1960 that age range includes 82.09 per cent of all certified specialists in Kansas and 70.79 per cent of all non-certified specialists. In 1955 this age range included 86.4 per cent of the certified specialists and 62.2 per cent of all non-certified specialists. In 1960 physicians in Kansas who are specialists (both certified and non-certified) make up 33.4 per cent of the 30-59 year age group.

Table XIV indicates the tendency of University of Kansas graduates to specialize. Of the University of Kansas graduates now in the state, 76.27 per cent are in general practice. In 1955 the precentage was 67.08. The percentage of Kansas University graduates in the state who are certified specialists has only increased from 14.11 per cent in 1955 to 14.45 per cent in 1960, which is not significant.

The specialists in Kansas are grouped into three main categories: surgical, medical, and other, as shown in Table XV.

Of the 2,382 physicians in Kansas in 1960 we find that 704 are specialists of whom 61 per cent are

TABLE XIII

DISTRIBUTION OF PHYSICIANS BY AGE AND SPECIALIZATION IN 1955 AND 1960

	Number of Physicians							
	Specialty							
Age Group Years	CERTIFIED		NON-CERTIFIED		*General Practice*		*Total*	
	1955	1960	1955	1960	1955	1960	1955	1960
Under 30	1	0	108	2	130	246	239	248
30-39	115	88	213	73	435	592	763	753
40-49	145	175	83	68	250	341	478	584
50-59	65	110	59	53	174	196	298	359
60-69	29	35	53	38	138	121	220	194
70-79	21	18	42	31	185	120	248	169
80 and over	2	4	12	9	80	62	94	75
Total	378	430	570	274	1,392	1,678	2,340	2,382

TABLE XIV

DISTRIBUTION OF PHYSICIANS BY SCHOOL OF GRADUATION AND BY SPECIALTY IN 1955 AND 1960

Status as to Limitation of Practice	*Physicians* K.U. 1955	K.U. 1960	OTHER KANSAS SCHOOLS 1955	OTHER KANSAS SCHOOLS 1960	OUT OF STATE SCHOOLS 1955	OUT OF STATE SCHOOLS 1960	*Total* 1955	*Total* 1960
Specialty								
Certified	135	160	4	2	239	268	378	430
Non-Certified	180	111	9	7	381	156	570	274
General Practice	642	839	43	14	707	825	1,392	1,678
Total	957	1,100	56	23	1,327	1,249	2,340	2,382

certified. Of the specialists, 345, or 49 per cent, are in the field of surgery and its sub-divisions; 259 or 36.79 per cent, are in medical specialties; and 100 or 14.21 per cent, are in all of the other specialties.

Let us break the data down further to show the distribution of physicians by the field of specialty. Table XVI indicates the number of specialists in Kansas (certified and non-certified) in each field of specialty.

Summary

This 1960 follow-up study, as did the 1955 study, has demonstrated a wide range of variation of distribution of physicians within Kansas. While the total number of physicians in the state in 1960 is practically the same as in 1955, the average number of physicians licensed each year over the past five years has shown an increase over the average number that were licensed in the preceding twenty years. This is in spite of the fact that there was a decided drop in the number that were licensed in 1958, the year that the basic science law became effective. The ratio of persons per physician in Kansas has increased from 876 in 1955 to 894.4 in 1960.

Physicians, on the average, are one year younger than they were in 1955. As in 1955 the majority of physicians in the state are between 30 and 59 years of age, which is the age period considered as being the most effective in an individual's practice. The percentage, however, in this age group has increased from 65.77 per cent in 1955 to 71.20 per cent in 1960. The percentage of physicians in the older age groups has dropped since 1955. Differences of age distribution of physicians practicing in Kansas in 1960 do not appear to be great enough to constitute a serious problem.

Of all the physicians in the state the percentage who are graduates of the University of Kansas has increased from 40.9 per cent in 1955 to 46.6 per cent in 1960. The percentage of physicians in small

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TABLE XV

DISTRIBUTION OF PHYSICIANS BY MAJOR GROUPS OF SPECIALTIES IN 1955 AND 1960

Physicians	*Specialties* SURGICAL 1955	SURGICAL 1960	MEDICAL 1955	MEDICAL 1960	OTHER 1955	OTHER 1960	*Total* 1955	*Total* 1960
Certified Specialists ..	173	200	139	161	66	69	378	430
Non-Certified Specialists	252	145	250	98	68	31	570	274
Total	425	345	389	259	134	100	984	704

	1955	*1960*
General Practice	1,392	1,678
Grand Total	2,340	2,382

Television in Medicine

Ten Years of Television at the University of Kansas Medical Center

DAVID S. RUHE, M.D.,* *and* KALE C. GENTRY, M.D.

EVERY PIONEERING VENTURE usually reflects the vision and initiative of some one man, however he may have been supported by others of similar spirit and perception. Dr. Paul W. Schafer,† appointed Professor of Surgery in 1949, brought television to the Kansas University Medical Center with the aid of Dean Franklin D. Murphy and with the crucial support of Dr. LaVerne Spake who was, at that time, a member of the Kansas State Board of Regents. A short-lived venture with monochrome TV from September, 1949, was replaced in November, 1951, with color TV of the CBS-Remington Rand Vericolor® system. So began a decade of adventure with television.

From 1949 to 1953 the programs were primarily procedural surgery, but with excursions into surgical anatomy, physiology and pathology. The lone color camera was locked into a special light fixture in a single operating room, while the receivers were distributed in major and minor classrooms.

From 1954 the base of operations was broadened to explore more widely the powers of the television "eye" throughout undergraduate, graduate and postgraduate medical center activities. Methodical incorporation of television into research, teaching, medical care and lay education was conceived. Logical applications of television were sought. Enthusiastic faculty members were offered active collaboration for their personal efforts. Yet the evolution of the technical aspects of television has controlled many of the steps possible, while the unique ecology of all teaching medical centers has dictated the direction of others. In 1956 the W. K. Kellogg Foundation gave a supporting five year grant to permit broad scale television development and to supply personnel both for technical innovation and for program operations. The American Cancer Society, both the Kansas Division and the national office, has been particularly helpful in support of special equipment needs.

Although the Kansas University Medical Center television activities have occurred in all four areas: in medical education, in medical diagnosis, in research and development, and in lay information, it seems most illustrative to record the highlights of a decade of work along departmental and/or topical lines. But first the underlying principles of visual communication should be briefly stated as a fitting framework for the overall efforts.

The Era of Visual Literacy in Medicine

The coming of all manner of visual tools of communication, their technical development to already useful degrees of reasonably foolproof handling, plus the gathering pressures of a film and television-oriented society all suggest that in medicine we are not far from a major breakthrough in the application of visual methods. In the medical school setting certain criteria seem to obtain for the adoption of visual media. In their production and utilization services, departments of medical communications contribute to all school and hospital functions. However, since medicine is an intensely practical profession conducted by extremely busy and necessarily individualistic personalities, the truly great advances toward visual literacy will probably occur when the various species of cameras become the personal eyes of the profession, for recording cases, for research observations, for routine diagnosis, for specialized treatment. Automatic cameras, film or electronic adaptations to great ranges of available light, and new economics in materials all point to improved and expanded *personal* handling of the visual media, including TV.

At Kansas University it has been our underlying goal to create and support the personalized use of television by individual teachers without reference to audience size, but rather toward seeking those functions of television which are "intrinsic" to medicine's needs for research, for diagnosis and for education. Since clinical teaching is conducted principally with real cases, it seems proper to ask TV to assist in intensifying these live experiences of medicine, rather than to substitute for them. This has been the theory and practice of our on-the-spot methods of use which flout the widely-held ideas of television as a "mass" medium. In medicine, therefore, we seek to make TV the servant of the instructor and the science, whether the student group is tiny or giant.

Originally prepared as a senior paper by Dr. Gentry, who was employed part-time for three years by the Television Section of the Department of Audiovisual Education; rewritten as a report to the Kansas medical profession.

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SURGERY: Color TV and the Big Closeup

Dr. Schafer's enthusiasm for television's potential in surgery was first explored for junior medical students and in postgraduate activities.[1, 2] During these early 1950's Smith Kline and French Laboratories were giving great impetus to color TV for surgery through a long series of programs at meetings across the country. The merits of TV for achieving surgical closeups were strikingly obvious, and these closeups augmented the impact of TV's immediacy. The CBS field-sequential system (theirs and ours) provided excellent color, despite certain technical difficulties. For a time a microwave link connected the Kansas City (Missouri) Veterans Administration Hospital with the University of Kansas Medical Center for the sharing of surgical programs. Operating room 518 with its gallery and adjacent control room was the originating site for all programs of this period.

In 1954 the gallery was converted into a fully-equipped classroom designed for on-the-spot utilization of TV in order to bring about the greatest possible intensity of surgical experience short of actual participation. A postgraduate course for general surgeons called "Operative Clinics in Surgery" was held for the five years 1955-59.[3] In this same setting there have been frequent miscellaneous demonstrations of color TV for postgraduate audiences, as well as utilizations suggestive of values for teaching surgical anatomy.[4]

However, the development of the art of color television during this formative decade has been slower than was once sanguinely expected. The CBS system, despite its good qualities, also has demonstrated intrinsic shortcomings. In order to forestall certain of these, and also to broaden our equipment armamentarium, a Dage Company 3-vidicon color camera was acquired.* At the same time the three prime technical obstacles of color cameras for surgery, e.g. light, mobility and facility, were approached for possible solutions, and significant improvements were achieved.

The CBS color camera was liberated from its fixed ceiling mounting, and handled with a CBS dolly-boom. The 3-vidicon camera was swung from a heavy dolly-boom of our own design, but fabricated by the Dage Television Company. This dolly-boom can function anywhere in the Medical Center, and notably anywhere in the surgery suite, the delivery rooms, the autopsy room, etc. The present great need in color TV for large volumes of intense, cool, lens-centered, focusable light has been remedied in part with the devising of the KU-Klein light.[5] The powers of the CBS camera were further augmented by acquisition of a large-screen color projector,** for use in the Battenfeld Auditorium. Yet despite these technical gains, which have allowed an ever greater facility and mobility of color TV, the state of the color TV art awaits major breakthroughs in camera and receiver equipment before it can be used widely with efficiency and economy in medical schools for the surgical specialties.

* Gift of the American Cancer Society, Kansas Division.
** Gift of the American Cancer Society, Inc.

RADIOLOGY: Natural Target for TV

Since monochrome TV is far superior to color in its technical controls and lower costs, the specialty of radiology with its black and white shadow pictures has been from the beginning an obvious target of television effort. Furthermore, there early appeared to be a number of important intrinsic advantages in applying TV to fluoroscopy. As events have indicated, revolutionary gains loom in the very near future.

First, there is the practically unlimited brightness provided by electronic amplification, thus eliminating the need for dark adaptation of the fluoroscopist's retinae, and allowing him to see with both rods and cones at reasonable light levels. Second, by electronic means the contrast of the picture can be controlled easily and automatically. Third—and of no small consequence—image storage techniques allow a single x-ray exposure to produce an image that can be viewed over a relatively long period of time, thereby reducing radiation to patient and doctor. Developing applications of this principle with a pulsing device,* or with a grid-controlled x-ray tube will soon produce a great reduction of x-rays when employed for serial studies. Television as currently used with image intensifiers does not yet reduce exposure, but requires slightly more than mirror optic systems available at present. Fourth, development of TV cameras utilizing x-ray sensitive tubes in the television camera theoretically permits a marked decrease in the radiation necessary to produce a good picture. Such reduction in radiation should be very great as further specialized tube development occurs. Future development of TV cameras utilizing x-ray-sensitive vidicons and orthicons holds great promise. Fifth, an infinite number of observers or students can watch the television fluoroscopy from close or remote stations in daylight. For certain routine types of fluoroscopy, the radiologist himself may prefer to view from a distance, thereby reducing his own total radiation increment. Sixth, the image may be recorded on magnetic or thermoplastic tape or motion picture film which is quickly available for projection-analysis, and can be preserved indefinitely for teaching and/or later comparisons. And of course the television images can be broadcast as a medical educational television program whenever this may be desirable, as long as the TV systems utilized in radiology continue to conform to broadcast standards.

* Dynapulse® Machlett Company.

Dr. Karl A. Youngstrom of the Department of Radiology in 1955 began to undertake incorporation of motion pictures and television into his research and departmental diagnostic services, initially in cooperation with Drs. E. Grey Dimond and T. K. Lin. For the purposes of the Cardiovascular Laboratory, they utilized a Dage TV monochrome camera chain with a Bell & Howell 16 mm. motion picture camera for their 5 inch Philips image-intensifier. In later years Dr. James E. Crockett and Dr. Marvin I. Dunn of the Department of Medicine have routinely used motion pictures and television for cardiac catheterization, employing the cameras for definition of cardiac and vascular pathophysiology, and recording this pathology for repeated playback, study, and teaching. Dr. Colvin H. Agnew recently has joined Dr. Youngstrom in the expanded television activities of the Radiology Department. A North American Philips Company complex consisting of a 9 inch image-intensifier with Philips vidicon camera and monitor has been installed with a Philips x-ray machine. Sound motion picture recording is supplied by a 16 mm. Cinephonic camera. The Dynapulse® is an integral part of the Philips x-ray system in this research complex. Speech research funds have contributed greatly to the development of this tool, through the collaboration of Drs. William Diedrich and Ralph Shelton. *(Figure 1)*

During the years 1956-59 a liaison between General Electric Company's X-ray Division enabled the television staff with Dr. Youngstrom to evaluate clinically a series of x-ray-sensitive semiconductor tubes of the TVX® series as developed by G. E. engineer John E. Jacobs. One of the series was a 12 inch tube built to medical specifications for ostensible utilization in hospital or office practice. A few units have subsequently been offered for sale for special diagnostic purposes. The potential electronic efficiency of this type of tube suggests that at least some relative of the TVX may well become the standard radiological tool for the office practice of medicine. In 1958 a comparative study of radiological methods of visualization, including several TV approaches, was undertaken but is unpublished. For current needs at least, image-intensifier television complexes appear to be the most practicable.

In the cardiovascular laboratory present TV use runs perhaps to 10 hours per week, while in radiology the use of TV may be as much as 12 hours per week. This annual total of more than 1,000 hours of television time appears to foreshadow great expansions of TV utilization when the technical television innovations for radiology begin to reach their apparent promise. Improvements in television systems already allow image details superior to contemporary fluoroscopic screens. While photoluminescent plates in development by RCA Laboratories offer another approach of great potential.

PSYCHIATRY: TV Makes Possible "Uncontaminated" Behavioral Observations

All the behavioral sciences share the problem of the "psychic contamination" imposed upon the patient-doctor relationships by the presence of observers. Using television, the intimate teaching-observation of psychiatric materials can be approached with a precision of analysis which has never before been possible. Television has been explored methodically for four years at all levels in the medical school, from psychodynamics for freshmen to psychotherapy for residents. This work by Drs. Sigmund Gundle, Paul C. Laybourne, Louis H. Forman, Merrill I. Eaton and Morton Jacobs[6] has been singularly provocative to the faculty. *(Figure 2)* Active steps toward expansion of television into other areas is being undertaken. Particularly attractive are the potentials in outpa-

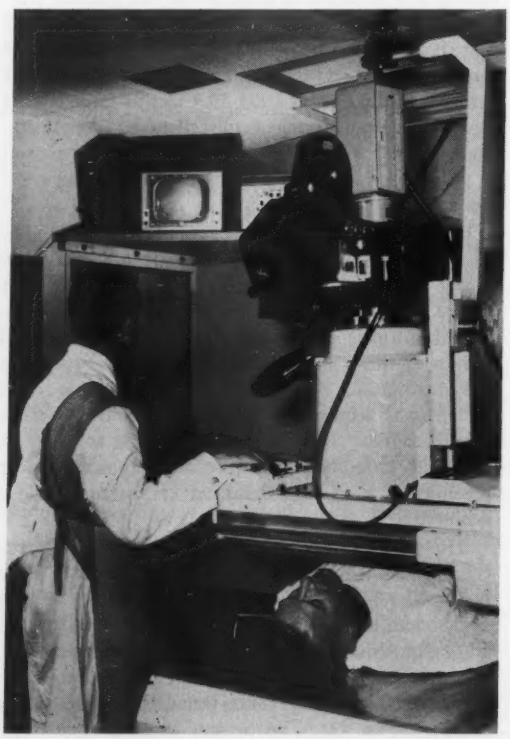

Figure 1. Television in Radiology. Special procedures room, Department of Radiology, equipped with Philips x-ray unit, 9 inch Philips image intensifier with Philips vidicon black and white television camera and Cinephonic 16 mm. magnetic sound motion picture camera. (Drs. Karl A. Youngstrom and Colvin H. Agnew.)

tient teaching and case supervision, the use of television as an instrument for the clinical testing of knowledge and skills, and the routine use of reusable videotapes for the recording of interviews so that later criticism, conferences, study, and development of a psychiatric visual teaching library will be possible. It is not impossible that TV will one day soon be considered indispensable for adequate instruction in psychiatry.

Many behavioral situations within other specialties

Figure 2. Television in Psychiatry. Wahl Hall auditorium large-screen TV demonstration utilizing Upjohn black and white projector. Dr. Sigmund Gundle presenting psychiatric material, Dr. Donald Greaves conducting interview in psychiatric building.

of medicine have been explored in preliminary fashion. "Television illustrations" in hearing and speech, rehabilitation, and certain aspects of nursing have only served to suggest the almost illimitable range of the TV camera in behavioral situations.

ENDOSCOPY: The Television Camera Heralds the End of Monocularity

Ever since endoscopes were devised, the problem of the endoscopist-teacher has been that he could not readily demonstrate to students the views which he himself was seeing. Holinger and Brubaker[7] were the first in the United States adequately to solve the problem of photographic endoscopes for the film recording of pathology. Recently vonLeden and Moore,[8] deMontreynaud, Edwards and Gladu[9] and others have been intensively seeking to apply to endoscopy the television camera with its immediate living image. In the last five years there has come into the ken of scientists the potential for extreme flexibility of endoscopes in the new glass fiber bundles; these embody the quartz rod light transmission principle but carry it to a logical conclusion in the fabrication of the new "fiberscopes."

For some three years we have been working desultorily with the Franklin Institute of Philadelphia, seeking fiber bundles of good quality for television experiments. More recently, Hovnanian of AVCO, working with the National Naval Medical Center, has produced a "dental probe,"[10] a fiberscope with developed optical accessories suitable for preliminary TV efforts. With purchase of one of these fiber bundles* has come the opportunity to explore television applications for the ear, nose and throat (Dr. G. O. Proud) and the gastrointestinal tract (Dr. A. P. Klotz).

In passing, it should be noted that routine photorecording of diagnostic problem materials for study and later consultation is expected to become more easily obtainable when the engineering of feasible videotape and motion picture systems for endoscopy have been achieved.

POSTGRADUATE MEDICAL EDUCATION: Time A-Wasting

Since the University of Kansas Medical Center has been the leading postgraduate medical educator of the U. S. for some years, and has pioneered the concept of lifetime responsibility for the education of its physician graduates, the use of television has been examined closely and many preliminary efforts have been undertaken. The existence of the excellent facilities of the Student Union-Continuation Center has offered unusual opportunities for certain types of television demonstrations. Over the past six years a wide range of television illustrations has been employed for various reasons: for novelty, for change of pace in dominantly talkie-talkie sessions, for provocative stimuli toward new areas of contemporary medical interest such as heart surgery, and, happily, often for such honest purposes as parent counselling (in hearing and speech), operative surgical clinics (with guest surgeons), dry clinics (of patients who were better handled by TV than shown on the floor before large groups), and many others. In all cases it should be emphasized that intensive planning and programming is necessary to achieve satisfaction with these large-audience groups.

In the Battenfeld Auditorium it has been useful to employ large-screen TV projection for greater impact. The CBS field-sequential projector** has been rather crotchety as a technical instrument, but provides striking images when functioning well. Recently the Upjohn Company has made a loan of a General Precision Laboratories monochrome projector which has made possible very satisfactory black and white projection. In the past, several of the national telecasts sponsored by pharmaceutical houses have been pre-

* Made possible by the American Cancer Society, Kansas Division.

** Gift of the American Cancer Society, Inc.

sented by large screen in Battenfeld Auditorium, notably the Lilly program on the Salk polio vaccine and the Wyeth program on long-acting penicillin for streptococcoses.

The cooperative microwave linkage between the Medical Center and the Kansas City (Missouri) Veterans Administration Hospital was installed in 1953 and discontinued in 1955. Although such television connections between teaching hospitals are highly practicable, television for medical education has seemed to require long strides before such linkages could become economically and educationally effective, and tenable as an administrative effort (see recent efforts of the Jacksonville (Florida) Hospitals Educational Program, Dr. Max Michael).[11]

With a Kansas Educational Television Authority and network in prospect, the Medical Center should realize certain potentials heretofore impossible. A studio space has been allocated on the roof of the F Building, adjacent to the teaching gallery of the Department of Surgery. From the studio, with satellite microwave facilities connecting the center with a transmitter somewhere near Lawrence, programs for doctors only can then be planned and telecast. For some years local efforts have been underway to develop a doctor's system of television encoding, wherein there could be maintained security of content, with privacy of patients and anonymity of doctors. Commercial encode-decode systems devised for pay television give early prospect of offering experimental telecourses which can prove the feasibility of postgraduate medical continuing education delivered privately to the doctors in their hospitals, at their desks or in their homes. Simultaneously, there is a multi-pronged national effort, in which Kansas University will share, to produce and share videotaped medical courses suitable for telecast to doctors either by open or by "scrambled" telecasts. Such telecourses can be converted to 16 or 8 mm. sound motion picture films, and can be made available for hospitals and individual physicians for self-instructional programs.*

MISCELLANEOUS DEPARTMENTS: What We Have Yet to Do; Promises and Prospects

The laboratory sciences have yet to be explored in the degree to which television obviously can be applied, as shown by other workers in medical TV. Unhappily, the Lawrence campus with its anatomy, physiology and biochemistry is prohibitively distant; 1962 will bring opportunity, when these departments will be housed in Kansas City. Use of the black and white camera in physiology, pharmacology, microbiology and pathology laboratory demonstrations has been suggested by many others[12, 13] but only scattered TV illustrations of the past years have scratched the surface at this medical center. The Departments of Physiology and Anatomy will undertake methodical incorporation of television into laboratory activities early in 1961. It seems plain that wherever demonstrations of procedures to be carried out by students are required, the vidicon camera handled by the instructor in front of his class can offer to each student the exact fingertip image of what he will shortly be doing himself. Simple, cheap and relatively foolproof vidicon cameras have been devised and will soon become part and parcel of routine preclinical science teaching.

Television as a method of research instrumentation offers many challenging avenues. Many biophysical measurements are possible utilizing the intrinsic qualities of television tubes as instruments to solve problems of light, contrast and time.[14]

Unfortunately, at least for television development, there is no school of dentistry associated with Kansas University, since some of the most provocative uses of television have occurred in the teaching of procedural dentistry.[14, 15] Nursing education gives prospect of many types of utilization; and our TV schedules of past years show scattered television illustrations of postgraduate nursing efforts.

Hearing and speech has found TV useful for large groups when it could not encompass its teaching audiences within one-way mirror observation rooms.

Rehabilitation and physical medicine are a natural arena of television demonstration and analysis.

Practical nursing, medical technology and radiological technology all suggest utilizations when economics make them possible.

LAY EDUCATION: A Wider Responsibility For the University Medical Center

Within the framework of our enlightened democratic society every state university may in time be conceived to owe its adult tax-paying public a lifetime of adult information as well as formal education. The coming of educational television to the great American state universities offers the prospect of an enormous expansion of extension services. Indeed, every home with a TV receiver becomes a candidate and target for multi-level education, formal and informal, which potentially involves almost all of the subjects of a university curriculum.

Anticipating the coming of the ETV network for Kansas, Kansas University has equipped and staffed a teaching and productional television unit in Lawrence. At the Medical Center in 1956 the first nine programs of our health education series, "The Highroads to Health," were produced and broadcast. Three were committed to film thereafter and have been widely distributed nationally. With the coming of videotape recording there is now an immensely widened prospect of the national sharing of pro-

* Note: a pilot program sponsored by the Missouri Academy of General Practice is exploring the improved use of motion pictures for postgraduate medical education.

duction responsibilities for scientific and health information. The University of Kansas will fulfill its share of this obligation.

THE DEPARTMENT OF MEDICAL COMMUNICATION: Platform Under Television Activities

An active department of medical communications, including illustration, photography and cinematography, a visual materials library, a utilization service and an equipment depot is one platform upon which a broad-based television effort can safely and profitably grow.[17] Because of the Medical Center's national leadership in the development of television for medicine, numerous consultations and visitations have been undertaken in behalf of other medical institutions. Two medical television workshops have been conducted locally, and many group demonstrations have been organized. Support has been extended to the Council on Medical Television of the Institute for Advancement of Medical Communication, to the Audiovisual Conference for Medicine and Allied Sciences, to the Association of American Medical Colleges, to the American Medical Association. Cooperation with the National Institutes of Health, the National Naval Medical Center, the Veterans Administration, the Calvin Company for its Film and Television Workshops, the American Association of Anatomists and the Intersociety Committee for Increase of Research Potential in Pathology. These efforts have enabled a widespread dissemination and sharing of the Kansas experience, for what it could offer to others.

RETROSPECT AND PROSPECT: The University Medical Center TV Facility

We hold it to be generally true that medical school television, to be accepted and used routinely, must become the personal tool of faculty members, one by one, specialty by specialty. From this truism, right or wrong, certain conclusions and directions may readily be drawn. First, the electronic engineers who will bring TV to ever greater precision, automatic function, versatility and economy are decidedly the spearpoints of progress, however much they may be influenced in their research by the criteria set them by biophysicists and physicians. The more than 1,600 television hours which the Medical Center has so far conducted have in the main been suggestive and exploratory. But they show a few clearcut present areas of important and probably permanent use, several areas of high interest for immediate development, and not a few very promising bridgeheads which await exploitation by ingenious medical minds.

Radiology should be the first to incorporate television into workaday office and hospital diagnosis, teaching and research. The behavioral sciences, notably psychiatry within the medical center, should find television virtually indispensable to truly effective teaching before another five years have passed; and there is some reason to think that certain aspects of behavioral diagnosis and treatment may be radically altered with TV observational tools. Specialized diagnostic and teaching methods, such as TV endoscopy and microscopy, have a high probability of successful development and early acceptance. Since all procedural demonstrations lend themselves to TV, when faculties can agree upon *what* procedures each *wants* to teach to what students, then the facility of television will come of age in all the laboratory and clinical sciences where methods of handling biological and human materials are shown.

Television offers new ways of looking and seeing. In the next decade few areas of medicine will remain untouched. Some few will be transformed by it. These new eyes jointly called television exist for medicine's use. The University of Kansas Medical Center hopes to contribute at least its share of productive work toward an ever wider vision for medicine.

Acknowledgements

The complex efforts required for pioneering in medical television have been made possible by arduous technical contributions by many collaborators. Among those who have been responsible for both operations and development are Messrs. Fred Berry, M. R. Klein, E. V. Henley, L. M. Penniston and W. H. Heisey. Among the photographic staff should be mentioned Messrs. W. M. McGrew, B. W. Johnson, B. E. LaVine and L. C. Ireland.

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Tumoral Calcinosis

A Radiologic Teaching Method

COLVIN H. AGNEW, M.D.

SEVERAL MONTHS AGO the Radiology Department added the "case" method of teaching radiology to its program to acquaint medical students and house staff with radiologic differential diagnosis. The merits of the "case of the week" have been established by others.[1] Many radiology departments have adopted Felson's "case of the week" program to their needs. Similar techniques are published regularly, such as the recent "orthopedic case of the week" (JAMA). In *Diseases of the Chest* Felson sponsors the "case of the month." On a quarterly basis it appears in the *Texas Reports on Biology and Medicine.*[4]

Competition is a common method of motivation. Felson found that a nickel reward was even a further incentive to participation. It is our hope that curiosity will be a sufficient challenge, and that reward will come in the form of increased knowledge. The present plan of departmental presentation is to select a film with a fairly obvious lesion, and to follow it in one week with a condition having similar but differential features. The features which distinguish the condition are posted along with those who had arrived at the correct diagnosis. A battery of view boxes in the corner of the film room provides interested students and staff with something to do while they wait for films. A brief résumé of the clinical information is provided. At times, perhaps, the selection of material is too subtle or obscure; it has been gratifying to note, however, the number of medical students as well as house staff who arrive at the correct diagnosis. Only a few of the senior staff have been willing to compete with the medical students and house staff.

Case Summary

This 19-year-old boy was referred to the Medical Center complaining of a lump on the left hip since 1957. Approximately four years earlier he had been seen here complaining of joint pains, mainly in the hands, but also in the shoulder and neck which were diagnosed as rheumatoid arthritis. At that time swollen metacarpal-phalangeal joints were present, and both elbows were slightly erythematous. Furthermore, it was believed that his extremities were enlarged.

Figure 1. Left hip. Conglomerations of calcium are seen regularly distributed through the mass intimately related to the greater trochanter.

This enlargement was attributed to pituitary gigantism. During his hospitalization his afternoon temperature regularly arose to 100°. It was thought, however, that his rheumatic fever was not active, but he was continued on aspirin.

Shortly after the insidious development of a firm lump on the lateral aspect of the left hip, small nodules developed about both elbows. At one time these were believed to be rheumatoid nodules and were treated without effect with cortisone. He was asymptomatic until September, 1959 when an injury to the left hip caused this mass to burst. Culture showed staphylococci. The hip abscess continued to drain. In December, 1959, material from the hip abscess showed *Actinomycosis bovis* organisms. A tumor was removed from the left elbow and reported as chronic bursitis with calcification. Direct examination and culture was interpreted as *Actinomycosis bovis* organisms. The hip lesion continued to

From the Department of Radiology, University of Kansas School of Medicine.

drain intermittently, and he was referred to the general medical service.

The diagnosis of actinomycosis was not confirmed here. The left hip lesion was completely removed and showed focal calcification consistent with calcific bursitis. These sections have been reviewed by Dr. Boley and he agrees that this represents tumoral calcinosis.

Discussion

In 1943 Inclan,[2] a Cuban physician, described three patients with giant, partially calcified tumors similar to this case occurring in three Negro females, ages 18, 19 and 10 years. Subsequently, Thompson and Tanner[5] reported on a similar condition in three members of the same family of nine children, and described a lesion as occurring in "young individuals, both sexes, which enlarge, grow rapidly, but growing to a definite self-limited size. These appear during adolescence and are self limited after growing for about one year." Thompson and Tanner emphasized the familial nature of the condition. It is of some interest that Ghormley in discussing Inclan's cases cited a boy 14 years old with two sisters who, apparently, all had this condition.

More recently Reeves and Barton[4] have reported three more cases in which two were siblings. All were Negroes.

The differential diagnosis should include calcinosis universalis and calcinosis circumscripta. Neither of these two conditions closely resemble the calcifications seen in this patient. Calcifications in collagen disease such as dermatomyositis might justify a serious consideration.

Myositis ossificans conceivably might appear to multiple sites in relation to the bursa, but usually these may be distinguished both on a clinical and radiologic basis.

Calcification about the hip joints in paraplegics

Figure 2. Left elbow. In the lateral view these calcifications are arranged lineally; however, the frontal view shows the tumoral feature.

Figure 3. Right elbow. The calcified nodules have much the same distribution and appearance as those about the left elbow.

and calcification seen in some serious injuries such as burns might be difficult to distinguish from the calcifications seen in this individual. The history, however, would be important and conclusive in the differential.

The important point about this case is that it is a benign condition with a familial tendency occurring during adolescence, and is a self limited disease which does not recur following surgical removal. These patients are prone to infection; chronic infection may lead to amyloidosis.[5] Proper treatment hinges upon the accurate diagnosis of the condition.

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Psychiatric Teaching

Operations of the K.U.M.C. Out-Patient Psychiatric Clinic

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EXPERIENCE IN THE diagnosis, disposition and treatment of patients in the Psychiatry Clinic is a major part of the psychiatric teaching program for senior medical students. The following is a report of clinic operations during the school term from September, 1959, to June, 1960.

Any patient who applied was given an appointment for diagnostic evaluation. Those patients typifying the psychiatric problems for which physicians, other than psychiatrists, should be able to assume responsibility were treated in the clinic. Appropriate referral of other patients who required long-term intensive psychotherapy or other treatment was made. At all times, students had close supervision by full-time and part-time faculty and the senior psychiatric residents in the clinic. Three hundred and fifty patients were seen; 123 men and 227 women.

Who Were the Patients?

The ages ranged from 10 to 83 *(Table I)*. The majority were in the 20 to 40 year bracket and next commonest were the adolescents. There was some age overlap in the adult clinic and the child psychiatry clinic in the latter group. Some of the adolescents had complaints similar to those of the older age group; for instance, the 14-year-old girl who complained about her mother-in-law, and with justification. Most were married *(Table II)*.

TABLE I

AGE DISTRIBUTION

Age	*Percentage*
10-20	16
20-30	29
30-40	27
40-50	12
50-60	8
60-70	5
70-80	3
83	1

Director, Outpatient Psychiatry Clinic, University of Kansas School of Medicine.

TABLE II

MARITAL STATUS

	Percentage
Married	61
Single	24
Widowed	3
Divorced	5
Separated	7

How Did the Patients Get to the Clinic?

Thirty-nine per cent stated that they were self-referred. Another 5 per cent were urged to come by family or friends. Three per cent were continued treatment cases carried over from the previous term. Twenty-one per cent were referred from the Medicine Clinic. Six per cent were referred by private physicians. Table III indicates other sources of referral. The self-referred patients were sufficiently sophisti-

TABLE III

SOURCE OF REFERRAL

	Percentage
Stated Self-Referred	39 plus 3% carried-over
Medicine Clinic	21
Private Physician	6
Family, Friend	5
Family Service Agency	3
Neurology Clinic	3
K.U.M.C. Emergency Room	3
Ob-Gyn Clinic	2
School, Minister, Private Psychiatrist, Probate Court, G.I. Clinic	1 (Each)
Lawyer, V.A. Hospital, Psychologist, In-Patient Psychiatry Department	.6 (Each)
G.U., Allergy, ORL, Endocrine, Pediatrics, Orth. Surg., C-V Clinics, Vocational Rehabilitation, Welfare Agency	.3 (Each)

cated to think that their difficulties might be of psychogenic origin. Despite the fact that students had learned techniques of referral, patients referred from other clinics stated that they had come to the Psychiatry Clinic because their other doctors "couldn't find anything wrong," inferring that a psychiatric diagnosis was being considered only by exclusion. There was a definite difference in the "psychological-mindedness" of the two groups.

Seventy-eight per cent of the patients were coming to this clinic for the first time. Twenty-two per cent had received treatment in previous years.

Where Did They Come From?

Fifty-six per cent were residents of Kansas and 44 per cent were from Missouri. As would be expected, 74 per cent came from within a 10-mile radius of the clinic. However, some came long distances for continued treatment *(Table IV)*.

TABLE IV

Residence: Kansas 56%
Missouri 44%

Distance Traveled	*Percentage*
Up to 10 Miles	74
10- 20 Miles	13
20- 50 Miles	7
50-100 Miles	6
100-150 Miles	5
1 Patient—180 Miles	
1 Patient—380 Miles	

What Were Their Complaints?

Many patients had multiple complaints. It is of interest to note that the complaint stated at the first visit was often not the real reason for coming and it often bore little or no direct relationship to the psychiatric diagnosis. Instead, it seemed to be just the "ticket of admission" to playing the role of "patient" in the clinic. It is traditional to complain of physical discomfort when going to see a doctor, and, accordingly, 21 per cent of admissions had somatic complaints as their stated reason for applying to the clinic for aid. By the second or third visit, the patient was often able to disclose the more basic difficulty.

Thirteen per cent of the patients complained of depression, and half of these had attempted or threatened suicide. Eleven per cent complained of intrafamilial difficulty, either between spouses or between parents and children. An additional 3 per cent complained of irritability or temper tantrums. Seven per cent complained of difficulty at work or in school. Six per cent had exhibited bizarre behavior or speech. Three per cent complained of various sexual deviations. One patient complained of "being age 23 and still not smart" *(Table V)*.

TABLE V

CHIEF COMPLAINTS

	Percentage
Somatic	21
Depression	13
Difficulty in intra-familial relationships	11
Nervousness as sole complaint	10
School or work difficulty	7
Hallucinations	4
Sexual deviations, phobias, insomnia, tantrums	3 (Each)
Loss of memory	2
Delusions, delinquent behavior, drug addition, confusion, obsessive thoughts and compulsions, withdrawal and lack of friends, fatigue, loss of self-confidence	

What Were the Psychiatric Diagnoses?

Twenty-nine per cent had psychoneurotic reactions and twenty-five per cent had psychotic disorders. Thirty per cent had personality disorders, either as the sole diagnosis or underlying a more acute reaction. Six per cent had psychophysiological disorders; six per cent had chronic (irreversible) brain syndromes; and four per cent were mentally retarded, cause unknown *(Table VI)*.

Eighty-nine patients completed a standard battery of psychological tests. Additional testing was done when indicated. Of those tested, 42 per cent had I.Q.'s in the average range (90-110). Forty-seven had I.Q.'s in the superior range and the rest were retarded *(Table VIII)*.

What Were Their Financial Circumstances?

This question is of interest in view of recent sociological studies on the occurrence and treatment of psychiatric illness in different social classes.[1] Thirty-seven of the patients were classified as able to pay for some treatment. Twenty-two per cent carried medical insurance. This included the oldest patients, a 70-year-old man with an anxiety reaction, a 74-year-old with cerebral arteriosclerosis, a 76-year-old chronic schizophrenic and a senile 83-year-old.

What Recommendations Were Made To the Patients?

Fifty-three per cent of the patients were deemed suitable for psychotherapy in the clinic, and 9 out of 10 did receive such treatment. Twelve per cent were given medications, usually of the ataractic or mood-elevating sort. Sixteen per cent were referred for hospitalization, and all but two of these patients were accepted. Five per cent were referred to Family Service agencies for marriage counseling *(Table VIII)*.

As stated above, many patients were seen only once or twice for evaluation. Other patients varied in number of visits up to 33. The majority required 3 to 10 visits.

TABLE VI

PSYCHIATRIC DIAGNOSES

	Percentage of Sub-Category	*Percentage of Total Patients*
Psychoneurotic Disorders		29
Anxiety Reaction	.29	
Dissociative Reaction	.05	
Conversion Reaction	.14	
Phobic Reaction	.05	
Obsessive Compulsive Reaction	.09	
Depressive Reaction	.38	
Psychotic Disorders		
Involutional Psychotic Reaction		4
Affective Reactions		
Manic Depressive Reaction		0.6
Psychotic Depressive Reaction		1.4
Schizophrenic Reactions		19
Simple Type	.07	
Catatonic Type	.03	
Paranoid Type	.43	
Schizo-Affective Type	.10	
Acute Undifferentiated Type	.05	
Chronic Undifferentiated	.30	
Latent (in remission)	.02	
Psychophysiological Disorders		6
Gastrointestinal Reaction	.38	
Nervous System Reaction	.29	
Musculoskeletal Reaction	.19	
Cardiovascular Reaction	.13	
Personality Disorders		
Personality Pattern Disturbance		5
Personality Trait Disturbance		9
Sociopathic Personality Disturbance		8
Transient Situational Personality Disorders		8
Mental Deficiency		4
Chronic Brain Disorders		6

What Were the Results of Treatment?

A valid answer cannot be given because of inadequate facilities for follow-up. Some patients who did not return for a scheduled appointment, when contacted, stated that they felt they had received sufficient help that they could now deal with their problems, and would call on the clinic again if it should become necessary. Others expected a "magic pill" and were disappointed when it was not forthcoming. Some broke off therapy for reasons inherent in their illness, as when insight was gained too rapidly, or they could not give up the gains obtained by remaining ill.

TABLE VII

INTELLIGENCE QUOTIENTS (SHIPLEY-HARTFORD)

	Percentage
120-130	8
110-120	39
90-110	42
70- 90	6
50- 70	3

1 Patient had an I.Q. of 35

TABLE VIII

RECOMMENDATIONS TO PATIENTS

	Percentage
Psychotherapy in student clinic	53
Hospitalization	16
Pharmacotherapy	12
Referral to Family Service for expert marriage counseling	5
Referral to out-patient psychiatry clinic nearer residence	3
Referral to psychiatric resident for psychotherapy	3
Referral to private psychiatrist	1
Referral to other K.U.M.C. clinics as indicated, to Vocational Rehabilitation, to private physician with recommendation, etc.	

Twenty per cent of the patients stated that they had been completely relieved of the complaint for which they had come. Twelve per cent stated that

they had been "much improved" and 14 per cent noted some improvement. Eleven per cent were continuing in therapy. These "improved" patients had obtained relief of symptoms and were again able to work and were more comfortable. In such brief therapy they obtained only minimal insight. The long-term intensive therapy necessary for "cure" was not available. In addition, all patients are not amenable to such treatment.

We are interested also in those who made first appointments and did not keep them. In a clinic in which students see patients for a total of only 9 or 10 days, missed appointments cut down appreciably on the clinical material from which they can learn.

There were 125 "no shows," 77 women and 48 men. Sixteen per cent of these were referred from the Medicine Clinic, 14 per cent were self-referred and 6 per cent were referred by private psychiatrists. Sixty per cent were from Kansas and 40 per cent from Missouri. The distance from clinic may have been a factor in some cases insufficiently motivated for treatment, as 7 per cent of this group were referred from more than 100 miles away.

The clinic was also engaged in research activities, in which the students participated. In so doing, they became aware of the placebo effects of drugs and of how the status of the doctor-patient relationship affected the actions of medications. They also became much more critical of medical advertising, when they observed for themselves objective evidence of the results of drug therapy as contrasted to claims made for the same medicines.

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Physician Distribution

(Continued from page 93)

communities who are Kansas graduates has increased over the 1955 percentage.

In 1960 we find 29.55 per cent of Kansas physicians are classed as specialists. There has been an increase in the number, as well as in the percentage of physicians, who are certified specialists. Wichita has the greatest number and percentage of physicians who are specialists. This was also true in 1955. As previously found in 1955, there is a preponderance of physicians in the surgical specialties in 1960.

With a few minor increases or decreases in one category or another, it has been found that there has been no outstanding change in the distribution of physicians in Kansas in 1960 as compared with 1955. A few small variations have occurred, but not enough to greatly change the over-all picture.

TABLE XVI

DISTRIBUTION OF PHYSICIANS BY FIELD OF SPECIALTY IN 1960

Specialty	*Specialty* CERTIFIED	NON-CERTIFIED	TOTAL
I. Surgical			
1. Surgery	66	78	144
2. Proctology	0	0	0
3. Neurosurgery	7	1	8
4. Orthopedic Surgery	23	5	28
5. Plastic Surgery	5	1	6
6. Obstetrics	0	4	4
7. Gynecology	0	0	0
8. Obstetrics and Gynecology	26	20	46
9. Ophthalmology	28	6	34
10. Otorhinolaryngology	30	17	47
11. Ophthalmology plus Otorhinolaryngology	2	4	6
12. Urology	13	9	22
II. Medical			
13. Dermatology	10	3	13
14. Internal Medicine	74	56	130
15. Allergy	1	3	4
16. Cardiovascular Diseases	1	3	4
17. Gastroenterology	0	0	0
18. Tuberculosis	0	0	0
19. Pediatrics	34	16	50
20. Psychiatry	0	11	11
21. Neurology	0	0	0
22. Psychiatry plus Neurology	41	6	47
III. Others			
23. Anesthesiology	8	17	25
24. Pathology	20	1	21
25. Clinical Pathology	0	0	0
26. Bacteriology	0	1	1
27. Radiology	33	5	38
28. Industrial Practice	0	0	0
29. Others	8	7	15
TOTAL	430	274	704
General Practice	1,678		
GRAND TOTAL	2,382		

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Future of Psychiatry

The Theory of the Open Ward

JOHN T. BRAUCHI, M.D.; MERRILL T. EATON, JR., M.D., *and* DONALD C. GREAVES, M.D.

PINEL REMOVED THE CHAIRS. For a while some doors were opened. Then they were closed again. Rees[9] opened them once more. How will this change psychiatric practice in the latter part of the twentieth century?

This we predict! The majority of psychiatric patients will no longer be treated in large, isolated, specialized mental hospitals, but instead will be cared for in open wards in general hospitals and in small psychiatric hospitals in their own communities. This will encourage patients to secure earlier and hence briefer, more effective treatment; enable the community to be more aware of the needs of the mentally ill; and will simplify psychiatric practice and break down the barriers between office and hospital practice.

England has been gradually opening the wards of her mental hospitals. Several of the English hospitals have been open since 1949. Rees,[10, 11] Bell,[1] Stern,[13] and others have demonstrated that most, if not all, psychiatric patients can be treated on open wards. This conversion to the open ward was carried out in large mental hospitals, many of them being isolated and occupied by chronic patients and having a low turnover rate. Recently, this trend of opening the wards has spread to the United States, also in the larger state hospitals.[12] More recently psychiatric wards in general hospitals have begun to open their doors. The conversion of the psychiatric ward at the University of Kansas Medical Center has been reported by Kim and Eaton.[3]

On the basis of experience with continued open ward management, the authors are convinced that: (1) No patient need be refused admission because he is "too obstreperous, belligerent, suicidal, impulsive or unpredictable." One possible exception is the criminally insane, or better, the insane criminal. These patients require more security than the ordinary locked ward can provide and therefore are best treated in the psychiatric facilities of a penal institution. For the other highly disturbed patients, the open ward milieu, the formation of a therapeutic relationship, and when indicated, somatic treatment suffices. (2) Active recreational and occupational therapy facilitates operation of an open ward. Patients are left idle or on bed rest only if this is required in their treatment. Resocialization and remotivation are essential parts of the therapeutic program. (3) Men and women patients can share living room, dining room, recreational areas, music and reading rooms with benefit. More attention is paid to grooming, deportment and table manners. (4) Formation of a patient council or government is helpful in arrangement of an open ward. The patients meet regularly with elected officers to make suggestions on improving facilities, plan recreational activities, introduce newly admitted patients, answer questions patients may have and reconcile any differences concerning the use of equipment. This engenders a feeling in the patients that the hospital is theirs, which Koltes[9] stresses as an important factor in management. (5) Hospitalization is more acceptable; consequently patients are better able to co-operate in therapy. The patient's dignity and self-esteem are maintained or elevated.[14] (6) The patient's legal status is simplified. Because of the restrictions in the patient's personal liberties inherent in a locked ward, it is necessary to obtain commitment or court order. Even if the patient comes in voluntarily it is usually necessary to have him sign a written consent for hospitalization. Implicit and too frequently explicit in court orders and commitment papers is the idea that the patient is irresponsible. Being designated as irresponsible is anti-therapeutic. Likewise, having a patient designated as irresponsible provides the physician with an arduous non-medical task of guardianship. Many quite sick psychiatric patients are capable of exercising responsibility. With simplification in the patient's legal status, the referring physician is not burdened with the clerical and legal procedures associated with commitment and his recommendation for hospitalization is more readily accepted by the patient.

The *Administrator's Guide* of the American Hospital Association lists 5,280 general hospitals in the United States. In 1945, 176 of these had psychiatric facilities. At present, there are approximately 600.[8] Even with this threefold increase, only 11 per cent

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of the general hospitals have psychiatric units. The success of open ward treatment of emotional illness makes the establishment of psychiatric facilities in the general hospital more practical.

Since special windows, detention screens, locks and seclusion rooms are no longer necessary, the creation of facilities would be no more difficult and little different than the addition of beds for any other type patient. Because the psychiatric patient is generally up and dressed during the day, facilities for recreation and occupational therapy are desirable. A dining room, serving cafeteria style, while necessitating the construction of a special facility, would in the end be more economical and therapeutic than serving trays to the patients in their room.

The establishment of open wards in the smaller general hospitals offers many advantages. The patient can be treated in his own community which will keep him in better contact with his family, friends, employer and the rest of the community. He will accept hospitalization more readily. Earlier acceptance and available facilities would lead to earlier diagnosis and treatment, hence a speedier recovery.

Local hospitalization would keep the community, as well as the family aware of the problems of mental patients in general. This leads to a better understanding of the needs of emotionally ill patients and facilitates rehabilitation. Relaxation of visiting rules would permit frequent visits from friends and family and allow them to participate actively in the patient's treatment.

The incidence of psychiatric disorders is high. Many smaller communities have established community guidance clinics in an attempt to deal with this problem. With hospital facilities available more psychiatrists might find these smaller communities attractive. The general practitioner has of necessity been treating more and more psychiatric cases. Obtaining a psychiatrist in the community would aid him in the treatment of his psychiatric patients.[6]

Day night hospitals and halfway houses are a type of open ward both designed to serve a particular purpose. Conservation of facilities is the primary aim of the day night hospital, alleviation of over crowding in large state hospitals, the goal of halfway houses.[5] When more open wards in general hospitals are established overcrowding and conservation of facilities will cease to be a problem.

For the psychiatrist, facilities in a general hospital brings him into closer contact with the other medical specialties. In a general hospital with a psychiatric ward, patients from other services showing psychiatric symptoms can not only be seen for consultation, but also may be transferred. If other conditions require continued care on a general medical or surgical ward, the psychiatrist can assist the patient's physician with psychotherapy or somatic treatment.[7]

At the present time some psychiatrists emphasize office practice and others hospital practice. This interferes with continuity of treatment for a number of patients. From the point of view of the psychiatrist there are both practical and psychological aspects which facilitate continuity of patient care. Conveniently located wards in general hospitals make it easier and less time consuming for the officer practitioner to attend the hospitalized patient. The authoritarianism implicit in a locked ward no longer intrudes on a permissive doctor-patient relationship. Likewise, the patient, first seen by the hospital psychiatrist, will find it practically and psychologically easier to continue the relationship after discharge.

The open ward in the general hospital will be of particular help to those states and countries who have overcrowded mental institutions.[4] The earlier admissions, diagnosis and treatment, ease of conversion of existing wards, briefer hospital stays, individualization of treatment permitting patient to work at his usual occupation, and constant community awareness of mental illness with subsequent facilitation of rehabilitation would substantially reduce the overcrowding and financial burden that is the responsibility of the government.

The unlocking of doors in mental hospitals has created a large number of possibilities in the future development of psychiatry. We as psychiatrists should constantly be reminded to re-inspect our traditional concepts of patient care and develop new plans for that future.

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School of Nursing

The Department of Nursing Education At the University of Kansas

E. JEAN M. HILL, R.N., M.S.

IN 1905, THE BOARD OF REGENTS recommended that a training school for nurses be established under the School of Medicine, and in the following year, four students were admitted. The Department of Nursing Education has continued to remain a department within the School of Medicine. Until five years ago, the director of nursing was responsible for both nursing service and the educational program for students, but at that time, education and service were separated, each being placed under separate administrative heads. The chairman of the Department of Nursing Education is responsible only to the Dean of the School of Medicine.

Within the Department of Nursing Education there are three kinds of educational programs: generic baccalaureate, practical nursing, and graduate nurse programs. The basic degree program is fully accredited by the National League for Nursing. During the years considerable change has occurred in the preservice program as offered by the department. With the admission of the last class of diploma students in 1950, the generic baccalaureate program became the only pre-service professional nursing program. The curriculum has been revised and reduced so that it now extends over 48 months.

Students are admitted to the Department of Nursing Education at the end of their sophomore year. During the summer quarter the students are on the Lawrence campus taking a nine credit integrated science course. Following this they spend two years at the Medical Center. During the fall quarter, 1960, there were 63 junior and 62 senior students enrolled. The department has enjoyed an enviable position of being highly selective in its choice of students. This coupled with a good program is reflected in the exceedingly high percentage of students who finish. Over a recent five-year period, an average of 86 per cent of those admitted graduated. Marriage constitutes the major reason for withdrawal. Reports from employers of graduates regarding their performance have been most favorable. The faculty has steadily increased in number and quality.

The Florence Cooke Department of Practical Nurse Education accepted its first class of 21 students in 1951. The establishment and sole support of this program of practical nursing as a pilot school within the Department of Nursing Education was made possible through a generous five-year grant from the Samuel H. Kress Foundation. At the end of this period, the foundation extended its funds for another three years. In July 1958, the University assumed the responsibility for the program, without any reduction in personnel but with a budget increase.

Since the beginning of the program, 21 classes have been admitted and 513 students graduated. The loss of students by withdrawal has been approximately 17 per cent which is less than the state average. During the years, the caliber of students has improved and recruitment problems have declined. There is considerable demand for the graduates from prospective employers.

The faculty for the practical nurse program consists of a director, five full-time and one part-time nurse instructors and one part-time teaching dietitian.

The Department of Nursing Education recognized the need to develop two areas of education for graduate nurses: short non-credit courses to provide immediate help and a general nursing program leading to a Bachelor of Science degree. It was decided that efforts should be concentrated first on the non-credit courses offered in cooperation with the Department of Postgraduate Medical Education.

In September 1958, a director for graduate nurse programs was employed. Since 1946, special non-credit programs for graduate nurses have been offered. Initially these were refresher courses for nurses who had been inactive and who were interested in returning to practice. They were so well received that plans were made to hold them annually. Through the past years attempts were made to meet some of the needs of all of the nurses who enrolled so that the programs carried a wide variety of topics. However, since 1958 with the appointment of a director, programs have been offered which attempt to develop depth of understanding and skill instead of the broadly oriented programs which did little to improve the competency of the nurses. For instance, a series of programs in head nursing and in nursing service administration have been offered each year since 1958 so that nurses may return for further study of specific aspects of their jobs. In addition to

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From the Department of Nursing Education, University of Kansas School of Medicine.

Tetanus

A Review of Experiences With Tetanus at K.U.M.C.

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ALTHOUGH THE AVERAGE PHYSICIAN may not see a case of tetanus in his entire professional career, the seriousness of the disease when it does occur, and the frequency with which prophylactic measures must be considered, warrant a review of experiences with tetanus at the University of Kansas Medical Center. Recommendations concerning the treatment and prevention of tetanus are presented.

In 66 Cases

From 1920 through 1959, a total of 66 cases of tetanus have been treated at the Medical Center. Table I shows the number of cases seen during each ten year period. The mortality rate of 35 per cent for the entire period demonstrates the seriousness of this preventable disease.

Since 1945, 33 cases of tetanus have been treated at the University of Kansas Medical Center and sufficient and comparable data was available in these cases to allow analysis. In this series there were 23 males and 10 females. The age distribution is presented in Table II. The patients varied in age from 8 days to 72 years. The incubation period was less than 14 days in 24 cases. In 5 cases the incubation period was indefinite because a specific causative wound or injury was not apparent. Trismus, nuchal rigidity, convulsions and dysphagia were the common signs and symptoms. The classic risus sardonicus was observed in 21 of the patients during the course of the disease.

TABLE I

TETANUS AT THE UNIVERSITY OF KANSAS MEDICAL CENTER
1920-1959

	Total Cases	*Fatal Cases*	*Mortality Rate (%)*
1920-1929	8	6	75
1930-1939	17	6	35
1940-1949	29	8	28
1950-1959	12	3	25

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Various Types of Wounds

The various types of wounds which were related to the occurrence of tetanus are presented in Table III. Puncture wounds or lacerations were the most common causative wounds of tetanus, and minor lesions were frequently the precipitating lesion.

Tetanus continues to be a problem in Kansas. From 1920 to 1959 sixty-six patients with tetanus were seen at the University of Kansas Medical Center. The mortality rate was 35 per cent. The data from thirty-three cases since 1945 are presented.

The most effective and safest way to prevent tetanus is immunization with tetanus toxoid. Even when it is necessary to give tetanus antitoxin because of inadequate previous immunization, tetanus toxoid should also be given.

None of the patients gave a history of previous immunization with tetanus toxoid. Four patients, however, had received tetanus antitoxin before the symptoms of tetanus appeared. A 48-year-old farmer, with

TABLE II

TETANUS IN 33 PATIENTS AT THE UNIVERSITY OF KANSAS MEDICAL CENTER
1945-1959

	Number	*Deaths*
Age		
Under 5	6	2
5-20	14	2
20-60	11	5
Over 60	2	1
Incubation Period		
Under 7 Days	5	3
7-14 Days	19	3
Over 14 Days	4	1
Indeterminate	5	3

a puncture wound in the arm, received 1,500 units of tetanus antitoxin 8 days before developing tetanus. A 14-year-old school boy who had an abrasion on the right knee received 1,500 units of tetanus antitoxin 4 days after the injury and 2 days before clinical symptoms appeared. A 9-year-old boy, who had a nail puncture wound in the foot, received 1,500 units of tetanus antitoxin on the sixth day after the injury and developed trismus and a stiff neck the following day. The last patient was a 45-year-old housewife who received a splinter in her foot and was given 1,500 units of antitoxin the next day, but developed tetanus 7 days later. Although these patients developed tetanus despite previous antitoxin, they did survive.

Treatment

All the patients in this series except one received tetanus antitoxin and antibiotics after developing tetanus. One patient died immediately following admission, before treatment was instituted. The amount of tetanus antitoxin given varied from 30,000 units to 1,650,000 units. A definite relationship between the mortality and the amount of antitoxin administered was not apparent.

The most obvious factor which did influence the mortality rate was a tracheostomy. Tracheostomies were performed on 10 patients and two expired (20 per cent). Eight of the 23 patients who did not have tracheostomies expired (35 per cent). Both patients who expired despite the tracheostomy died within 24 hours following the procedure.

TABLE III

FOCI OF INFECTION IN 33 PATIENTS WITH TETANUS AT THE UNIVERSITY OF KANSAS MEDICAL CENTER
1945-1959

	Number	*Deaths*
Puncture Wounds	10	3
Lacerations	8	1
Miscellaneous	10	
Endometrium	1	
Surgical Incision	1	
Submucous Resection	1	
Burns	1	
Ingrown Toenail	1	1
Umbilicus	1	1
Blister on Heel	1	
Eating Glass and Mud Pies	1	
Crushing Injuries	2	
Indeterminate	5	3

TABLE IV

TREATMENT OF TETANUS

1. Neutralize any circulating toxin.
   a. 100,000 units antitoxin intramuscularly.
   b. 100,000 units antitoxin intravenously.
2. Surgical removal of necrotic tissue and debridement.
3. Antibiotic treatment.
4. Control of tetanospasms.
   a. Sedation—Phenobarbital and avertin.
   b. Muscle relaxants—Curare, Anectine.
   c. Maintain airway—Tracheostomy.
   d. Corticosteroids.

Discussion

The treatment of tetanus is summarized in Table IV. The treatment can be divided into four categories. The first is to neutralize any circulating toxin before it can combine with the central nervous system and produce further effects. This can be accomplished by antitoxin which should be given both intravenously and intramuscularly. The second aspect of therapy is surgical removal of necrotic tissue and debridement. This does not imply radical amputations, since the general principles of surgery in patients with tetanus are the same as for any wound or injury. The third important part of treatment is the administration of antibiotics to prevent the multiplication of the clostridial organisms. Penicillin is preferred since it is bactericidal to Clostridium tetani. The fourth and most important aspect of treatment is nursing care and control of tetanospasms. Sedation is very important, but care must be taken that oversedation is not produced. This is also true in the use of curare and

TABLE V

TETANUS PROPHYLAXIS

I. Prophylaxis in absence of wounds or injuries.
   1. Tetanus toxoid.
      a. Alum-precipitated—.5 ml. and repeat in 4 weeks.
      b. Fluid toxoid—.5 ml. in 3 doses at 3 week intervals.
   2. Booster doses every 5-10 years.
II. Prophylaxis after a tetanus-prone wound or injury.
   1. Patients with previous immunization—fluid toxoid only is necessary if previous booster was within 10 years.
   2. Unimmunized patients.
      a. 3,000-30,000 units antitoxin.
      b. Start active immunization with toxoid.
      c. Antibiotics.

similar agents. Tracheostomy is frequently necessary in order to maintain an airway. Corticosteroids have been used in a few patients to decrease toxicity, but not sufficiently to justify a conclusion concerning their effect. They may be particularly useful to counteract hypersensitivity in the patient who is allergic to antitoxin.

The more important aspect of the tetanus problem is its prevention. There are many factors which influence our decision concerning proper prophylaxis against tetanus, and some are controversial because of incomplete knowledge concerning the disease. The patients requiring prophylaxis can be divided into two groups: those without wounds and those with wounds. The general recommendations are presented in Table V.

The effectiveness of tetanus toxoid was demonstrated in the Armed Forces during World War II. Tetanus toxoid produces an active immunity and reactions to the toxoid are mild and very infrequent. It is necessary to give booster doses, preferably, every 5 years, but rapid response in antitoxin levels occur even when booster doses are 10 to 15 years apart. Tetanus Toxoid Alum Precipitated is preferred for routine immunization because of slow absorption. In infants the triple antigen, diphtheria and tetanus toxoids and pertussis vaccine combined, is generally preferred.

After a wound or injury, patients who have previously received toxoid within 10 years, will only require a booster injection of toxoid. In this instance fluid toxoid is the toxoid of choice because it produces a rapid elevation of the serum antitoxin level.

Unimmunized patients present a more difficult problem. It is impossible, in many instances, to decide whether a wound is tetanus-prone and the decision generally is made to give antitoxin. Sensitivity tests should always be performed because of the danger of serious immediate reactions. Delayed reactions, including serum sickness with severe neurological complications, cannot be predicted and will continue to occur as long as it is necessary to give antitoxin. The passive immunity conferred by antitoxin also decreases after repeated injections because the patient develops antibodies to the horse serum. For this reason it is recommended that individuals who receive antitoxin also be given an initial injection of toxoid with instructions to return in four weeks to complete their active immunization.

School of Nursing

(Continued from page 109)

the full-time faculty, outstanding leaders in nursing have been invited to participate.

Not only has the interest of the Kansas nurses continued in the programs, but registration by nurses from surrounding states has increased steadily. The 1959-1960 Annual Report of the Department of Postgraduate Medical Education shows that eleven nursing programs were offered and that 12 states, including Kansas, were represented in the nurse enrollment of approximately 1,000.

By the fall of 1960, the Department of Nursing Education was ready to initiate the new program for graduate nurses to study on a bachelor's level. This program is designed to increase the competency of the registered nurse in professional nursing, to provide her with a satisfactory background for later specialization, and to increase her contribution to meeting the health needs of people and to nursing. Through the curriculum offerings, the nurse acquires a deeper and broader understanding of the social and natural sciences and relates these to the nursing care of patients. Approximately one-half of the program is in liberal education with the remaining portion in professional study. The nursing courses are offered on the Medical Center campus. The B.S.N. program, like the workshops and institutes, has been designed primarily for the nurses in Kansas. In developing it, quality of teaching and learning experiences is of utmost concern.

Those concerned with the Department of Nursing Education can be proud of its record of achievement and the service it gives to Kansans through the three educational programs in nursing. However, the department needs the support of all Kansans, especially those in the field of health, to ensure its continued growth and achievement.

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UNIVERSITY OF KANSAS SCHOOL OF MEDICINE

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April 12, 13 and 14, 1961

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DUNCAN A. HOLADAY, M.D., University of Chicago.
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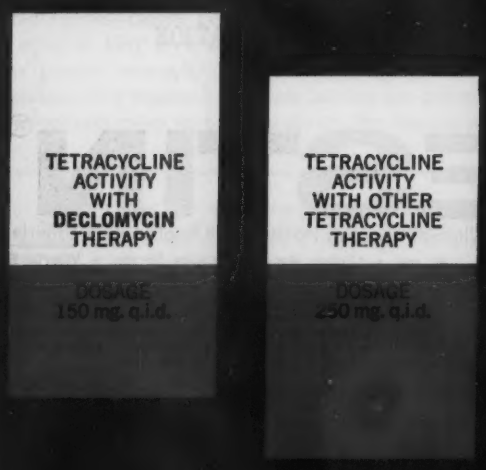
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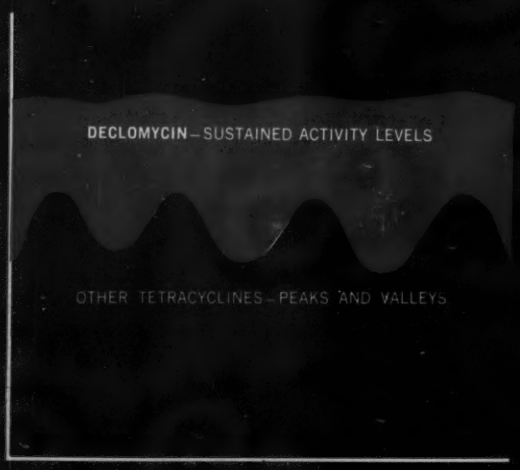

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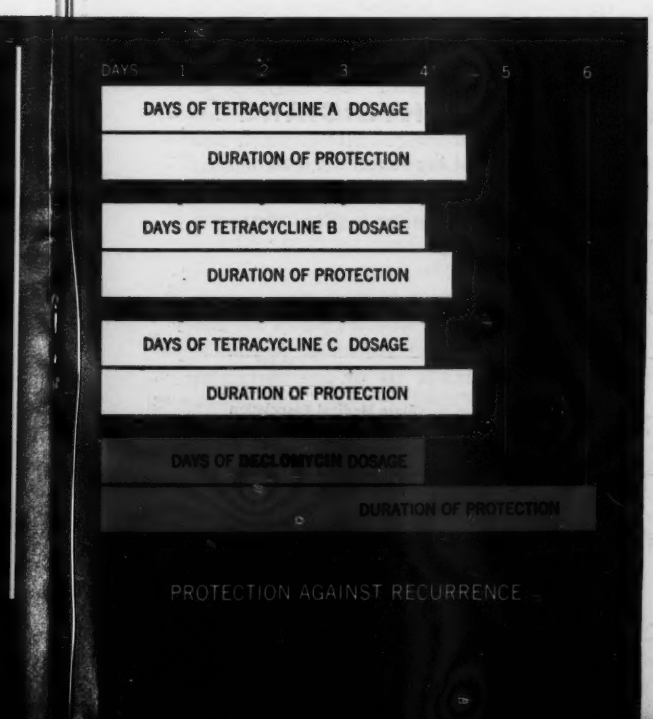
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Enteric Bacilli

On the Hands of Hospital Food-Service Employees

RUTH STEINBERG *and* RUTH GORDON

THIS PRELIMINARY STUDY of the incidence of enteric bacilli on the hands of food-service employees was undertaken when bacteriological cultures of several tube feedings prepared with homogenized milk revealed somewhat higher coliform counts than did the milk used in their preparation. Frequently the patients requiring such feedings are debilitated adults or young children with impaired resistance to infection. Diarrhea is not an uncommon problem in patients fed by tube. Evaluation of the mode of handwashing practiced by employees handling food seemed pertinent if a possibility existed that employees might be contaminating food. Although numerous reports have been published on the bacterial population of china, glassware, silver and utensils[1, 3] and on food,[4, 9] little has been found concerning the bacterial status of the hands of food-service personnel. Harwood and Minch[10] reported in 1950 a bacterial study of the hands of 34 food-handlers employed in 22 Boston restaurants in which the hands of only 12 individuals were free of coliform bacilli. *Escherichia coli* was isolated in 13 of the 34 samples.

Perhaps more often than we are aware the food and the hands contacting food may bear some relationship to the enteropathogenic organisms involved in the gastroenteritis seen in the hospitalized patient. Epidemic enteritis in hospitals and institutions responsible for the care of infants has been reported in which it was believed that certain enteric bacilli were involved.[11, 14]

During the past 15 years a considerable amount of evidence has accumulated implicating certain strains of *Escherichia coli* in the diarrhea of infants and young children. A steadily increasing number of reports associate this organism with enteritis of epidemic and non-epidemic nature. Payne[11] reported that five epidemics in Arizona were associated with *E. coli* 055:B5, 0111:B4, and 0127:B8. Enteropathogenic *E. coli* were associated with 25 per cent of the 474 cases of acute diarrhea in infants less than 24 months old, but in the youngest group of infants, under two months of age where mortality rate is greatest, the percentage rose to 40. A cause and effect relationship appeared to exist between these three serotypes of *E. coli* and infantile diarrhea. Similar reports in recent years by Horwood, Hutchinson and Armstrong[12, 14] have also directed attention to these serotypes, and to others, in acute diarrheas and gastroenteritis in infants.

Infants and children during the first two to three years are particularly prone to enteritis associated with these enteropathogens but the adult is only infrequently host to such infections. Adults, however, are not immune to these organisms. Under normal conditions most healthy adults appear to be resistant but the possibility remains that debilitated adults are susceptible and that certain individuals may become carriers or excretors of these organisms. Hutchinson[13] recently observed one nurse, among 123 adults, who was termed an excretor of *E. coli* 055:B5 during an epidemic of gastroenteritis among infants in England. Fecal examinations reported by Stevenson[15] on 72 adults who were hospitalized for various reasons but all had some degree of diarrhea, revealed 14 cases in which *E. coli* D433 was isolated. The debilitated adult whose resistance is lowered, perhaps to that of the young child, may develop enteritis from ingesting material contaminated with certain types of *E. coli*. Ferguson and June[16] fed gradient doses of *E. coli* 0111:B4 to 114 volunteer prisoners. With large experimental doses subjects experienced anorexia, diarrhea and toxic symptoms. One control subject, presumably infected by ingesting a small amount of contaminated material, became a carrier excreting the experimental organism, *E. coli* 0111:B4 in increasing numbers day by day. Experimental infections, following oral ingestion of these enteropathogens, have been produced by other investigators including Neter and Shumway[17] and Koya and associates.[18]

There have been enteric organisms other than *E. coli* felt to be possible causal agents in outbreaks of gastroenteritis and diarrhea. Feig[19] noted that in an outbreak involving 450 persons, and resulting in nine fatalities, the difficulty was attributed to the presence of *Pseudomonas aeruginosa* in food.

Neter's recent review of enteritis due to enteropathogenic *E. coli*[12] points out the importance of "adequate handwashing techniques" among the precautions necessary for prevention and control of epidemics of enteritis in institutions.

Ruth Steinberg, Assoc. Professor, Department of Dietetics and Nutrition, University of Kansas Medical Center. Ruth Gordon, Chairman, Department of Dietetics and Nutrition, University of Kansas Medical Center.

Since *E. coli* is considered an indicator of fecal pollution its presence in water, milk and food suggests the possible presence of other enteric pathogens and of filth. It is recognized that fresh produce and meats have a known high count of enteric bacilli[20, 21] which logically can contaminate the hands of food-service workers. Dack[22] states that "our environment and the non-sterile foods in our habitat contain enteric bacilli regardless of our efforts to eliminate them." It is understood that we can not hope to entirely eliminate these organisms from food but we can minimize the danger of additional contamination of food by teaching employees the importance of frequent and proper handwashing.

Facilities for handwashing in the food production and service areas of the Department of Dietetics and Nutrition are believed to be superior to those in existence in many hospital food-service areas. There are 22 lavatories in the units preparing and serving food. More than 170 employees utilize these lavatories which are equipped with chain-attached hand brush and nail file, and bar soap containing 2 per cent hexachlorophene. Hand driers of the warm-air type have replaced paper towels in most areas.

To determine the bacterial status of food-service employees' hands with respect to certain enteric bacilli 150 cultures were obtained from the hands of employees as they performed a variety of tasks in the preparation and service of food. The procedure for obtaining material from the hands of employees for cultures was suggested by the Department of Microbiology. Cultures were prepared from rinsings from the employees' hands. One person was responsible for collecting all samples. All subsequent preparation, examination and identification was done by the Department of Bacteriology. Samples were reported for the presence of the following enteric bacilli: *Escherichia coli, Aerobacter aerogenes, Pseudomonas aeruginosa, Paracolon bacillus* and *Streptococcus faecalis.*

Results

One or more enteric bacilli were identified in 48 of the 150 cultures done from the rinsings of the employees' hands while performing routine tasks in the food-service areas. *Aerobacter aerogenes* which occurred with the greatest frequency was isolated in 33 of the 48 positive cultures. *Escherichia coli* was identified in 15 cultures or in 10 per cent of all cultures done. The other three organisms were reported less often as the accompanying table indicates.

The fifteen employees from whose hands *E. coli* was isolated were performing a variety of duties at the time sampling of their hands was done. Their work activities are listed in Table II.

TABLE II

WORK ACTIVITY OF EMPLOYEES FROM WHOSE HANDS ESCHERICHIA COLI WAS ISOLATED

Work Activity	*Positive Cultures*
Preparation of Formula and Tube Feeding	5
Preparation of Other Foods	
Handling Lettuce	3
Handling Raw Beef	1
Handling Commercially Peeled Potatoes	1
Slicing Peeled Washed Onions	1
Portioning Baked Desserts	2
Service of Food	0
Clean-up Operation	
Rinsing Used Infant Formula Bottles	1
Cleaning Food Conveyors	1
	15

TABLE I

INCIDENCE OF CERTAIN ENTERIC BACILLI ON THE HANDS OF FOOD-SERVICE EMPLOYEES

Organisms	*Preparation of Formula and Tube-Feeding*	*Preparation Other Food*	*Service of Food*	*Clean-up Operation*	*Supervisory*	*Total*
Escherichia coli	5	8	0	2	0	15
Aerobacter aerogenes	7	17	7	2	0	33
Paracolon bacillus	0	2	0	0	0	2
Streptococcus faecalis	0	1	1	0	0	2
Pseudomonas aeruginosa	0	2	1	0	0	3
Total Number of Cultures	24	53	47	17	9	150
Positive Cultures	11	25	9	3	0	48

TABLE III
ENTERIC BACILLI ON FRESH PRODUCE

Produce	*Colony Count*	*Aerobacter Aerogenes*	*Pseudomonas Aeroginosa*	*Paracolon Bacillus*	*Streptococcus Faecalis*
Lettuce, unwashed	too numerous to count	+	0	+	+
Lettuce, routine wash	too numerous to count	+	0	+	0
Lettuce, 1 extra wash	405/.2 cc.	+	0	0	0
Lettuce, 2 extra washes	260/.2 cc.	+	0	0	0
Lettuce, 3 extra washes	184/.2 cc.	+	0	0	0
Radishes, routine wash	–	+	+	+	0
Onions, unwashed	–	0	+	0	0
Onions, routine wash	–	0	+	0	0
Tomatoes, unwashed	–	+	0	0	0
Eggs, in case, unwashed	–	0	0	0	+

None of the hand brushes used at the lavatories in the work areas revealed the presence of any of the five enteric organisms reported here.

The identification of enteric organisms on fresh produce revealed the presence of no *Escherichia coli* on the samples of food examined. Because of the fact that the hands of the first employee whose hands were sampled while handling lettuce were reported positive for all five organisms, cultures were taken from lettuce washed through extra waters, and plate counts were included. The number of colonies diminished as the lettuce was washed a greater number of times. Table III shows the distribution of the four enteric bacilli found on the produce.

Discussion

Although no attempt was made in this preliminary work to identify the serological types of *E. coli* found on employees' hands the possibility remains that enteropathogenic types were present.

Examination of the list of tasks *(Table II)* performed by employees from whose hands *E. coli* were isolated reveals that while mixing formula 5 positive cultures were obtained. Two of these cultures were taken from the same person on different days. Although terminal sterilization of infant formulas is routine in this hospital the standard procedure for employees prior to mixing formula is a three-minute hand scrub using a sterile brush without touching the water taps after the scrub is started. Although employees are discouraged from wearing rings, other than a simple wedding ring while working, they have not consistently complied with this suggestion. This particular employee was in the habit of wearing both a wedding ring and an engagement ring while working in the formula room. A negative culture was not obtained until a third sampling was done on her hands while she wore only the plain wedding ring.

Eight positive cultures for *E. coli* were found among the 53 samples from areas where other foods were prepared. In some cases the type of material could explain the presence of *E. coli* on the employees' hands. In 6 of the 8 instances the employees were working with raw vegetables or meat which are known to be contaminated to varying degrees with enteric organisms.[20, 22] Although the few samples of raw produce cultured in this study did not reveal the *E. coli* organism, its presence may be expected on unprocessed food. However, two employees who were portioning desserts at the time samples were taken did have cultures which were positive for *E. coli.*

No positive cultures for *E. coli* were found among the 47 samples from employees involved in the actual service of food to patients or personnel.

Two positive cultures for *E. coli* were reported among the 17 persons concerned with clean-up operations such as scraping dishes, dishwashing, cleaning food conveyors and removing kitchen waste. One of these persons handled used infant formula bottles, and the other cleaned a food conveyor which had been in the patient area. Contamination of the bottles and cart may have occurred in the patient area, but this is pure conjecture. It may have been present on the food-service employees' hands.

In this preliminary work on 150 bacteriological cultures from the hands of food-service employees one or more of the five enteric bacilli studied were identified in 32 per cent of the workers. Ten per cent of the cultures revealed the presence of *Escherichia coli.* More extensive work is, of course, needed to

(Continued on page 119)

Medical Technology

Past, Present and Future

R. J. EILERS, M.D., ***Kansas City, Kansas***

MEDICAL TECHNOLOGY is one of the fifty or more allied health fields working with physicians today in patient care. Although these fields have been a necessary corollary to the development of scientific medicine practiced today, considerable lack of understanding has developed among physicians concerning these fields, especially, their scope and effect on patient care and the necessary qualifications for competent personnel in the fields. This brief survey of facts is offered for better understanding of the field of Medical Technology.

Origins of Medical Technology

The beginnings of Medical Technology in this country are entwined with the rapid development of laboratory medicine after the turn of the century.[1] Since laboratory medicine was introduced into this country from the German speaking countries, it began by the physician performing the simple tests of hematology and urinalysis in a laboratory on the ward or in his office. These tests were done in conjunction with the physical examination. Frequently, in teaching centers the tests were taught to the medical students in physical diagnosis.

As the value of these simple tests to medical care became established, the demand for them increased and the need arose for the busy physician to have a trained person to carry out these tests for him. Although in teaching centers this was partly solved by resident and medical students performing the tests, in non teaching hospitals and physician offices on the job training of bright high school graduates or college students began to provide trained laboratory personnel. Impetus was given to the need for this trained personnel with the discovery of blood groups, the introduction of chemical procedures which could be done on reasonable amounts of blood and urine from patients, and the development of the techniques of bacteriology. All of these procedures required skills and background which the busy physician did not have time to acquire so he could teach to others. Of necessity, full time or part time laboratory physicians in conjunction with basic scientists took over many medical laboratories to establish these techniques and teach them to trainees. This began the rather rapid evolution of the general laboratory worker who had the knowledge and art of technics—the medical technologist.

Dr. Eilers is Assistant Professor of Pathology and Director of Clinical Laboratories, University of Kansas Medical Center.

Evolution of Medical Technology[2]

1900-1910—On the job training of personnel in hospital laboratories and physicians offices to do the desired simple laboratory procedures of urinalysis and hematology.

1910-1920—Discovery of blood groups, introduction of clinical chemistry and bacteriology stimulated development of hospital training programs for general laboratory workers to provide these procedures for patient care. World War I particularly accentuated the need for trained personnel for blood transfusion work in the armed forces.

1926—American Society of Clinical Pathologists (ASCP) formed a committee to study standards for training of medical technicians.

1928—ASCP reorganized the study committee and named it The Board of Registry of Medical Technicians of the ASCP.

1929-1933—The Board of Registry certified practicing laboratory workers recommended by pathologists as qualified candidates. No examinations were required.

1930—Dr. Hillkowitz, the Chairman of the Board of Registry, at this time, defined the usage of the terms medical technologist and laboratory technician. He defined the medical technologist as one who has a University degree and at least one year of practical experience in a recognized laboratory. The laboratory technician was an old term and used to designate the experienced laboratory worker who has no college training.

1933—Applicants for the Registry were required to take an examination. Also, applicants were required to have a minimum of 30 semester hours of college credit including 8 hours of college chemistry. The Board of Registry of ASCP requested the Council on Medical Education and Hospitals of A.M.A. to make a survey of Schools for Clinical Laboratory Technicians.

1936—The report of this Survey was published and accepted by the A.M.A. legislative body. During this survey the Council staff visited 196 schools and found three general types.

1. *College or University* (26 in number). These required a college degree or three years of college

work before entering the 12 month practical training in the affiliated hospital laboratory department. Usually on completion of the hospital training a B.S. in Medical Technology was conferred.

2. *Hospital Laboratory Department* (149 hospital schools and 12 in independent laboratories). Course conducted on an apprenticeship basis. Students were admitted after one to four years of prerequisite college preparation.

3. *Commercial Schools* (nine in number). These were characterized by acceptance of students regardless of preparation. They did extravagant advertising, made promises of placement, and charged large tuitions. These were not considered acceptable schools by the A.M.A.

In the same publication containing the survey, the first list of A.M.A. Approved Schools for Clinical Laboratory Technicians was recorded. They were the schools in the first two catagories above. The Essentials of an Acceptable School for Clinical Laboratory Technicians were also outlined.

1937—The name of the Board of Registry of Medical Technicians was changed to the Registry of Medical Technologists of ASCP.

1938—The prerequisite minimum college work to enter an A.M.A. Approved School of Medical Technology was changed to 60 semester hours including 12 hours of biological science and nine hours of chemistry. The hospital training program continued to be 12 months.

1949—The Board of Schools of Medical Technology was organized by the ASCP to assist the Council on Medical Education and Hospitals to approve, inspect and elevate the standards for training schools of Medical Technology. This established the inspection of schools on a five year basis.

1958—The A.M.A. Council on Medical Education announced new prerequisites for admission to an A.M.A. Approved School of Medical Technology effective January 1, 1962. The education requirements will be 90 semester hours including 16 hours of chemistry, 16 hours of biological science and a minimum of three hours of college mathematics. When this three years of college work is intergrated with professional training in a hospital school affiliated with the college or university, the four year program could lead to a baccalaureate degree in medical technology.

1960—Reports from the Registry, Council of Medical Education and Board of Schools show 734 A.M.A. Approved Schools listed with a capacity for 5,563 students.[3] Actual enrollment was 3,944 students or 71 per cent filled. As of June 19, 1959, 34,554 Medical Technologists had been registered since 1928 and 26,374 were currently registered.

This evolutionary calendar reveals the change from the on the job trained laboratory worker for doing simple procedures to the college graduate medical technologist capable of doing simple to complex techniques in chemistry, bacteriology, hematology, blood banking, histology, and urinalysis. The medical technologists have matured into another professional group to provide service for the physician and his patient. Their national organization, the American Society of Medical Technologists, actively participates with the Council on Medical Education and Hospitals of the A.M.A., and the Board of Schools of the ASCP to improve standards of training and the quality of laboratory work in this country.

Kansas Programs

There are eleven A.M.A. Approved Schools of Medical Technology in Kansas located as follows:[3]

Grace Hospital	Hutchinson
*St. Elizabeth Mercy Hospital	Hutchinson
*Bethany Hospital	Kansas City
Providence Hospital	Kansas City
University of Kansas Medical Center	Kansas City
Bethel-Deaconess Hospital	Newton
Lattimore-Fink Laboratories	Topeka
St. Francis Hospital	Wichita
Wesley Hospital	Wichita
Wichita St. Joseph's	Wichita

Total student capacity in these schools is 101 and usually they are 60-75 per cent filled. All of these schools are college or university affiliated except the two with asterisks.

K.U. Programs

From inception in 1929, the medical technology program at K.U. has been a five-year program. The students complete an A.B. degree on the Lawrence Campus before entering the 12 month certificate course at the Medical Center. Usually, the A.B. degree is in bacteriology, but other degrees are accepted if the student has had the minimum course hours in chemistry, biological science and mathematics recommended by the Council on Medical Education and Hospitals of the A.M.A. Graduates from other colleges and universities are considered on the same basis.

In 1954, a four-year program was established leading to the B.S. in Medical Technology. The students spend three years on the Lawrence Campus or the Campus of Kansas State University at Manhattan taking the necessary prerequisite college work before entering the certificate course at the Medical Center. The certificate course provides the student with 30 hours of college credits towards his B.S. degree.

Approximately 379 graduates have completed these two programs. Of these 30 per cent are still actively working in the state of Kansas and 30 per cent more

in other states. Of interest is another 20 per cent who maintain an inactive status with the ASCP Registry indicating their eventual intent to return to active work in Medical Technology. This group will require the availability of refresher postgraduate programs for them. Likewise, the actively working medical technologists need available postgraduate programs to advance their knowledge and skills.

Postgraduate Programs

Since 1949-50 the K.U. Postgraduate Medicine Department has offered an annual three-day Postgraduate Course in Medical Technology. The program offers graduate technologists an opportunity to refresh and improve old methodology, and gain knowledge of new methodology in laboratory medicine. Outstanding guest scientists describe and demonstrate new methods and discuss their value as parameters in laboratory medicine. Workshops provide opportunities to the registrants to try new methods and discuss the difficulties of the methods with colleagues who are using them. Demonstration sessions provide exposure to new equipment, research tools and methods, teaching aids and surveys of a particular laboratory subject.

In 1960 two Technology Traineeships were announced. Refresher course A offers the qualified laboratory worker who has been inactive for a number of years a six-month refresher course to review basic methods and gain experience with new methods and equipment. Refresher course B offers actively working technologists an opportunity to improve their skills and knowledge in a particular section of the laboratory. The course time for B varies from two weeks to three months depending upon laboratory experience desired and background of the candidate.

The statistics concerning registrants who attend the annual Postgraduate Course reveal they come from not only the small and large hospitals and clinics in Kansas and Missouri but from many other states throughout the country. (See Tables I and II.) Slowly this course has developed a national reputation for providing an educational opportunity for laboratory workers of all levels. The common sharing of an educational experience by the various levels of laboratory workers can frequently lead to better relations between these workers and to the development of a common working goal of quality patient care.

TABLE I

Course Year	*Registrants*	*By States* KAN.	MO.	OTHER	*No. of Diff. States*
1950	213	128	76	9	6
1960	366	147	103	116	18
1961	470	132	168	170	21

Frequently, the registered technologist with only two years of college work is returning to the campus to complete an A.B. or B.S. degree in a science. Others are entering master programs in medical technology or allied fields to improve their professional knowledge and ability to provide more complex methodology and quality service for patient care. Many of the technologists working in medical laboratories today are capable of doing research on technics and methods for improved patient care if given the opportunity in the laboratory, i.e., time and space.

Future

As in the past, the future of Medical Technology will remain entwined with the development of Laboratory Medicine. Perusal of the table of contents of most medical and laboratory journals indicates both of these fields will incorporate more complex techniques each year—not only into their research, but also into the routine laboratories providing service for patient care. Consider the possibilities of routine viral studies, tissue antibody techniques, quantitative chemical techniques on tissue, immunoelectrophoretic studies, other advance physical methods applied to blood, body fluids and tissue, autotransfusions via freezing techniques, elaborate hormone analysis, etc. Likewise, there will be further automation to handle not only routine studies but also the more complex methods. Automation will provide greater availability of the tests, a more rapid processing of the tests, reduction in cost, and greater accuracy.

The incorporation of more new techniques into the medical technology field will intensify present prob-

TABLE II

FROM 452 REGISTRANTS' QUESTIONNAIRE YEARS 1960 AND 1961

Question		*Kansas*	*Missouri*	*Other States*
Registered? (includes ASCP and AMT)		113	91	195
Degrees?	No	46	44	68
	A.B. or B.S.	82	45	130
	M.S.	1	6	17
	Ph.D. or M.D.	1	3	9
Where Employed?				
Hospital <100 beds		64	25	59
>100 beds		32	45	111
Misc. (Office, Clinic, Indust.)		33	21	46
Supervisor?		63	41	165
Teaching Responsibility?		34	39	134

lems and raise further problems for this maturing profession. For example:

1. Increased prerequisite educational requirements for the general technologist (physics, microbiology, etc.).

2. The question of training the general medical technologist or the technologist specialist or both.

3. The necessity of the non-technologist specialist in the laboratory and his working relationships with the technologist.

4. The need for categories of laboratory workers, i.e., laboratory aide, technicians trained for specific laboratory duties, the general medical technologist, and the technologist specialist.

5. With various categories of laboratory workers is there a need for more than the one Registry now recognized by the A.M.A.? There have developed several registry boards for certifying groups in conjunction with organizations of laboratory workers.

6. Will the voluntary registration now in effect suffice or is there need for licensure of technologists? Four states now have licensure laws for technologists.[4]

7. Will the technologists undergo unionization or will their professional society be sufficient to maintain rapport with physicians and administrators about salary, qualified personnel, and working relations?

The above are common problems which have faced other professions during their growth and development, but eventually solved with aggressive, intelligent leadership and individual activity and pride in his profession.

The Challenge

To the medical technologist the above problems demand a solution and plan of action to nurture the further maturity of his chosen profession. This will require a self inventory of abilities and goals, decisions with plans, and active participation in his professional society and programs for self development.

To the physician these problems should also demand concern since the medical technologist is "his hands" in the laboratory performing the necessary tests for his scientific practice of medicine. This requires the physician to have knowledge of "his hands" —their qualifications and abilities, quality of results they produce, and their plans for further development. This knowledge can be easily obtained through the development of a connective line of communication between the physician and "his hands"—the medical technologist.

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Enteric Bacilli

(Continued from page 115)

show whether the *E. coli* found on food-service workers' hands are pathogenic types and also to determine what procedures might best protect food from contamination, or keep it at a minimum, in any institution where patients are fed. Until some of these questions are answered we should intensify the teaching of employees in proper handwashing techniques and develop in the personnel a better understanding of the importance of good hand hygiene. It may be that with better motivation hand washing habits could be improved. Emphasis should undoubtedly be placed on (1) more thorough washing, using a proper technique, (2) enforcement of a rule forbidding the wearing of rings, (3) thorough washing of hands on completion of each different task particularly those which involve handling raw food to prevent transfer of contamination from raw foods to cooked foods.

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Convulsions, Lethargy, Fever and Coma

Case Presentation

A 55-YEAR-OLD WHITE MAN with a history of convulsions was admitted to KUMC for the first time on August 6, 1959, and he died on August 14, 1959.

During the past two years he had noticed unusual clumsiness of his hands, and for the past six months he had complained of a "crawling" sensation over the left side of his forehead. He had also complained of intermittent frontal headaches and some slight stiffness of his neck for several months.

On June 24, 1959, while at breakfast, he suddenly slumped over the table and had clonic convulsive movements of his arms and legs. He was unconscious for about eight minutes, and afterwards he felt "sleepy." He had no incontinence. At that time he was seen by his local doctor and placed on a daily dose of 300 mg. of diphenylhydantoin sodium with 30 mg. of phenobarbital to be taken at bedtime. He apparently did well and seemed to be normal until August 5 when again at breakfast he had another similar episode and slumped over and had convulsive movements of his arms. He was unconscious for about four minutes and afterward was somnolent. His wife stated that during the time between his first and second seizure he would fall asleep easily during the day whenever he sat down. Following the second convulsion he had a fever of 104 degrees, and he was hospitalized in his local community. He seemed to be normal during that time until the morning of his admission here when he became unsteady and had poor articulation. On his way to this hospital he rambled incoherently. His decreased awareness and incoherence fluctuated from time to time after admission.

In 1946 he had had two hernia repairs and a right nephrectomy because of a stone; otherwise he had had no serious illnesses.

His family history was non-contributory. The system review was within normal limits.

The patient was a well developed, well nourished, somnolent white man who responded to questions but drifted easily to sleep. His blood pressure was 130/80; pulse, 100 and regular; respiration, 14 per minute; temperature, 103 degrees. His head was normal, and his neck was supple. The pupils were round, regular and equal, and reacted to light and accommodation; the extra ocular muscles were intact. There was slight first degree horizontal nystagmus on right and left lateral gaze. The fields were full, and fundi were negative. The ears were normal, and the canals were clear. The palate moved only slightly, and there was no gag reflex. The tongue was normal.

Examination of the chest was negative except for bilateral rhonchi in the lungs. The heart had a regular sinus rhythm, and there were no thrills or murmurs. The bladder was distended and reached the level of the umbilicus, but the abdomen was otherwise soft, and no organs or masses were felt. The extremities were normal. The neurological examination showed clouding of the sensorium and somnolence. Cranial nerves II through XII were tested and nystagmus, poor palatal movement and absent gag reflex were the only positive findings. The motor examination was negative. Cerebellar function tests were not done because of the patient's poor cooperation. He responded to pinprick bilaterally, and the corneal reflexes were intact. No meningeal signs were present. There was diffuse hyperreflexia with abdominal reflexes, and the toe signs were downgoing.

On two occasions the urine showed a faint trace of albumin with a few pus cells. Both urine cultures were negative. On admission the white count was 13,700 with 70 per cent polymorphonuclear neutrophiles (69 per cent filamented and 1 per cent non-

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filamented), 22 per cent lymphocytes, 8 per cent monocytes. The hematocrit was 43 ml., and the hemoglobin was 13.4 gm. per cent. Platelet counts were 124,000 and 163,000 on two occasions. The VDRL was non-reactive. The BUN was 35 mg. per cent; blood glucose, 122 mg. per cent; carbon dioxide, 21.2 mEq/L; sodium, 130 mEq; potassium, 5.1 mEq; chloride, 91 mEq. The spinal fluid on August 6 showed 9 white cells; 2 red cells; a flat colloidal gold curve; sugar, 87 mg. per cent (at which time the blood sugar was 204 mg. per cent); total protein, 38 mg. per cent. On August 9 the spinal fluid contained 768 red cells and 46 white cells with 15 per cent polymorphonuclears, 85 per cent lymphocytes. The CSF sugar was 95 mg. per cent (blood sugar, 122 mg. per cent); protein, 43 mg. per cent. On August 12 the spinal fluid showed 101 white cells with 30 per cent polymorphonuclears, 70 per cent lymphocytes. The CSF sugar was 67 mg. per cent (115 mg. per cent blood sugar); protein, 191 mg. per cent. The blood ammonia was 70 gamma per cent. Liver function studies were: alkaline phosphatase 1.6 millimole units, total serum bilirubin 0.3 mg. per cent, direct serum bilirubin 0.1 mg. per cent, cephalin cholesterol 1 plus, thymol turbidity 2 units, serum albumin 2.48 gm. per cent, serum globulin 2.08 gm. per cent, cholesterol 183 mg. per cent (with 65 per cent esters). Several blood cultures were all negative at 72 hours. The acid phosphatase was 0.4. Cephalin flocculation was 1 plus. Febrile agglutinations were negative with the exception of typhoid O which was positive 1:20 and paratyphoid A, positive 1:40. Nose and throat cultures grew out non-hemolytic staphylococci. Tuberculin and histoplasmin skin tests were negative at 48 hours. Routine smears and culture of the spinal fluid were negative as were India ink and acid fast stains. On the first spinal tap the pressure was 239 mm. and the fluid was crystal clear; on the second the pressure was 90 mm. with crystal clear fluid; on the third the pressure was 110 mm. with slightly xanthochromic fluid. The Kolmer test was negative.

An electroencephalogram taken on August 10 showed a poorly organized record for an adult with pseudo-rhythmical activity predominating at times as spike and slow wave in the left temporal region at one and one-half second intervals and at times as right temporal slow waves at 2 to 3 second intervals. The impression was a markedly abnormal electroencephalogram.

The patient's temperature was 103 degrees on admission, and it remained elevated throughout most of his hospitalization occasionally rising to 104 degrees. On the day of admission he was placed on diphenylhydantoin sodium, procaine penicillin, and streptomycin, and these were continued throughout his hospitalization. On August 8 he was started on 500 mg. of tetracycline every six hours and phenobarbital, intramuscularly. He had numerous seizures, most of which began on his left side with only occasional seizures beginning on his right side. All, however, terminated in a generalized tonic-clonic convulsion. On the day following admission he became somnolent, and thereafter did not respond to painful stimulation. On August 11 bilateral carotid arteriograms were done. During the last three days of his life he continued to have a high fever, and he was tachypneic and completely comatose. During the last week he required continuous bladder drainage and tube feedings. On August 14 at 7:45 p.m. no blood pressure or pulse was obtainable, and he was pronounced dead.

Dr. Mahlon Delp (moderator): Are there any questions?

Russell Settle (student):* Can you describe more fully the patient's symptoms and his course after the first convulsion?

Dr. Harry White (resident in neurology): He responded to questions and seemed to be perfectly rational. After the onset of his symptoms he had continued to work as an aircraft employee, only occasionally complaining of a slight headache and some stiffness of his neck. His wife said that he fell asleep easily if he sat down. He had been on medications at that time.

Jonathan Todd (student): Did he have any vomiting at any time?

Dr. White: He vomited occasionally, but he had a naso-gastric tube because of slow gastric emptying.

Eleanor Siegel (student): Did he receive intravenous fluids?

Dr. White: Only until the gastric tube was inserted.

Dean Stucky (student): Why was he catheterized?

Dr. White: Because he had urinary retention on admission.

Mr. Stucky: Was the catheter left in?

Dr. White: On the second hospital day he became more comatose, so the catheter was kept in.

Douglas Sheafor (student): Did he have a history of alcoholism?

Dr. White: No, he did not.

Mr. Stucky: Was there a history of trauma?

Dr. White: No.

Mrs. Siegel: Were more blood counts and serum electrolyte determinations done?

Dr. Delp: Subsequent complete blood counts showed a leukocytosis similar to that recorded in the

* Although a student at the time of this conference in December, 1959, he, like the others referred to as students received the M.D. degree in June, 1960.

protocol. Total white counts were 14,000 to 10,000. Electrolytes were drawn several times: serum sodium was 130 to 126 mEq; potassium, 5.1 and 4.3 mEq; chloride, 91 and 87 mEq. The hemoglobin went from 13 to 11 grams.

Mr. Stucky: What was his temperature course while he was in the hospital?

Dr. Delp: His temperature was elevated all of the time, and sometimes as high as 104 degrees.

Mr. Settle: Did he have any nuchal rigidity at any time?

Dr. White: Not that I recall.

Earl Wright (student): Had he been exposed to any toxins in his work?

Dr. White: He was employed in the painting department of an aircraft plant, but I am not sure whether he was exposed to any toxins.

Mr. Sheafor: Were rales heard in the chest at any time?

Dr. White: Dry rales and rhonchi were heard in the chest throughout his hospitalization.

Dr. Delp: If there are no more questions we will have the electrocardiograms.

ELECTROCARDIOGRAMS

Mr. Todd: An electrocardiogram taken on the second day after admission *(Figure 1)* shows a rate

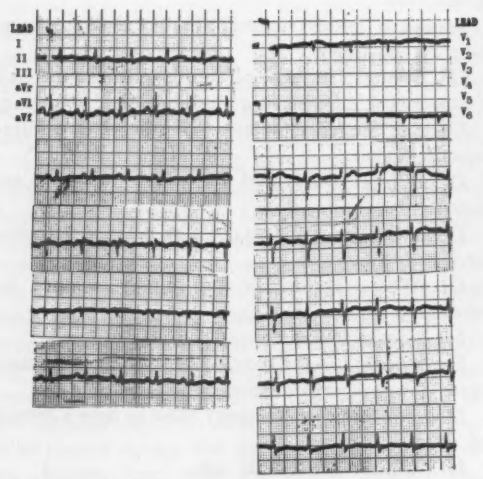

Figure 1. Electrocardiogram taken on August 7, 1959.

of 110 to 120 with a normal, sinus rhythm. The P waves are slightly peaked and about 2.5 mm. high. The P-R interval is within normal limits. The R waves are somewhat low with voltage; there is never a high R wave to suggest rotation. The S-T segments are not depressed, and the T waves are normal. Because of the peaked T waves I interpret this tracing as compatible with pulmonary emphysema. The tachycardia is consistent with high temperature.

Dr. Delp: Thank you, Mr. Todd. May we have the x-rays now, please?

X-RAYS

Mrs. Siegel: A chest film taken on August 7, the day after admission, shows normal bony structure and a normal heart. The lung fields are clear, and the costophrenic and cardiophrenic angles are not blunted. A lateral view of the chest shows clear costophrenic angles, and there is no basal pneumonitis. I interpret it as a normal chest film.

A carotid arteriogram taken on August 11 *(Figure 2)* shows good filling of the anterior cerebral, the

Figure 2. Carotid arteriogram taken on August 11, 1959.

supra callosal, and middle cerebral arteries. Bony structures are normal, and there are no calcifications. A film taken at the same time as the lateral view shows the anterior cerebral artery in the midline which tends to rule out a space-taking lesion above the tentorium. A film taken approximately one second later is in the late arterial phase and shows no sign of any atypical cerebral disease.

A KUB film on August 11 shows the Levine tube in the stomach and the indwelling catheter in the bladder. Bony structures appear to be normal. I can-

not define the psoas shadow because of gas in the bowel. The left kidney is outlined, and there is some dye in the kidney and in the bladder. No abnormalities are seen in the KUB film, and I interpret these films as normal.

Dr. Delp: Thank you. May we have your comments, Dr. Youngstrom?

Dr. Karl Youngstrom (radiologist): I just want to point out that although the left kidney shows quite well the right kidney does not.

Dr. Delp: May we have your differential diagnosis now, Mr. Wright?

Differential Diagnosis

Mr. Wright: My differential diagnosis is based on the sudden onset of convulsions, lethargy and fever leading to coma and death in a 55-year-old man.

Congenital and heredito-degenerative diseases such as lipoidosis and cerebral sclerosis can be ruled out because of the incompatible history and physical findings as well as the clinical course. Idiopathic epilepsy can be excluded because of the patient's age and because of the usually benign course of that disease. Collagen diseases such as disseminated lupus erythematosus, periarteritis nodosa, and blood dyscrasis can be dismissed because of the lack of history and appropriate physical findings. General metabolic diseases and manifestations such as hypoglycemia, uremia, and alkalosis as well as miscellaneous disorders such as hypothyroidism and heat stroke can be eliminated because of the lack of appropriate blood chemistry, history and physical findings. Cerebrovascular diseases are characterized by a gradual onset, prodromal periods, vascular insufficiency and localizing signs and symptoms. Cerebral embolus can be ruled out because of the absence of extracranial sources such as endocarditis or atrial fibrillation.

Intracerebral hemorrhage usually presents with early, persistent localizing signs, and there is bloody cerebrospinal fluid in about 70 per cent of these cases. The lack of signs of severe meningeal irritation and bloody spinal fluid excludes subarachnoid hemorrhage.

Neoplasm is an attractive diagnosis. Tumors of the anterior fossa can produce generalized convulsions and fever. It is difficult, however, to reconcile that diagnosis in the absence of signs of localizing sensory and motor impairment, especially in view of the rapid course without signs of increased intracranial pressure. Nevertheless, subcortical neoplasms such as glioblastoma multiforme can produce such a clinical picture, particularly if it extends to the meningeal or ventricular surfaces. The possibility of scattered metastatic malignant lesions either from a glioma or from an extracranial tumor producing a so-called gliomatosis and carcinomatosis cannot definitely be excluded. Although there were no signs of increased intracranial pressure and no indication of extracranial malignancy from which metastases could arise, this does not preclude the diagnosis.

Finally, I will give first consideration to infectious diseases of the central nervous system. The diffuse cerebral symptoms such as coma, confusion, convulsion, and headache without distinct localizing signs such as hemaplegia, cranial nerve palsy and motor or sensory deficit can be consistent with encephalitis. The cerebrospinal fluid findings and protracted fever tend to support that diagnosis. I do not believe a bacterial organism was causative because of the absence of meningeal irritation, the negative cerebrospinal fluid cultures and smears, the normal cerebrospinal fluid sugar, and the predominant lymphocytic leukocytosis. An inadequately treated bacterial meningitis may smoulder along with many of these same symptoms, but there is nothing in the patient's history to warrant its consideration as a primary diagnosis. A cerebral abscess with diffuse seeding could be postulated, but the absence of an extracranial source, distinct localizing signs and increased intracranial pressure militate against that diagnosis. Fungal diseases which can affect the central nervous system such as cryptococcosis, nocardiosis, histoplasmosis and blastomycosis are rare in the absence of systemic manifestations. I would also like to point out that the India ink preparation and cultures of cerebrospinal fluid were negative. In luetic meningeal encephalitis one would expect to find a positive serology, a greater meningeal component and localizing signs.

My diagnosis is viral encephalitides. The findings of cerebrospinal fluid pleocytosis with lymphocytes predominating, normal cerebrospinal sugar, and normal or elevated protein gives strong diagnostic support to a diagnosis of epidemic viral encephalitides. The enteric virus group may be excluded. Poliomyelitis characterized by myalgia, marked meningeal irritation and paralysis presents a symptom complex incompatible with our case. Coxsackie infections often present with many of the same symptoms. ECHO virus may be dismissed because of its usually benign course. We do not need to consider the post-infectious encephalitides because there is no history of antecedent infection. Consistent with a prolonged course and fatal termination, however, are the epidemic equine and St. Louis encephalitides and a number of sporadic viral infections such as mumps, herpes simplex, and the so-called nuclear inclusion encephalitides from which no viruses have as yet been isolated. It is difficult to differentiate the individual agent on clinical grounds, and I can only speculate that the viral etiology is confined to the epidemic arthropod-borne viruses or to one of the sporadic viral infections which affect the central nervous system.

Clinical Discussion

Dr. Delp: Thank you. I would like to emphasize several items which were gathered from the history of the physician who first saw the patient, and there are some points that need clarification. It has been assumed that the patient was a perfectly well man who had a convulsive seizure while eating breakfast on the morning of June 24. He saw his physician shortly afterward. A spinal tap was done at that time, and normal protein was found. A Wassermann test was negative, and there was a cell count of 4 in a colorless, clear fluid with no evidence of increased pressure. It was discovered at that time that the patient had a family history of diabetes. He had had a nephrectomy, although this was not emphasized for reasons that are not entirely clear to me.

After his seizure the patient continued to work, but he often complained of headaches and pressure sensations in the left temporal region. He had speech difficulty and some clumsiness of his arms, apparently worse on his left side than on his right. He had frequent sensations of giddiness, mild syncope and some vertigo. On August 3 he had a severe headache which lasted all day, and toward evening of that day he fell to the floor and had jerking movements of his arms and one of his legs. He had a fever of 102 degrees. The following morning while at breakfast he had another major convulsive seizure. At that time he had a fever of 104 degrees. He was taken to his local hospital, and subsequently he was transferred here. Now, Mr. Sheafor, how do you explain why this apparently well man had a sudden seizure on June 24?

Mr. Sheafor: I believe that his seizure was the onset of viral encephalitis.

Dr. Delp: Mr. Settle?

Mr. Settle: I agree with Mr. Sheafor, but there may have been an irritable focus which was set off by the presence of encephalitis.

Dr. Delp: Mr. Stucky?

Mr. Stucky: One of the first signs of viral encephalitis is a major convulsion occurring in an apparently well man who gets up the next day and goes back to work at his regular job.

Mrs. Siegel: Was the convulsion the onset of his disease?

Dr. Delp: Yes, it was. The point I am trying to emphasize, however, is that the patient got up the next morning and went to work, apparently feeling well. What do you believe could have caused him to have that convulsion at breakfast, Mr. Settle?

Mr. Settle: In my opinion the time that the convulsion occurred is insignificant. It could have occurred at night, and no one would have known anything about it.

Dr. Delp: The second convulsion also occurred at breakfast. Will you explain the negative spinal fluid examination on the day after his first seizure, Mr. Sheafor?

Mr. Sheafor: The spinal fluid examination showed clear fluid, 4 cells, normal pressure, negative serology, normal protein of 35 mg. per cent all of which presents the typical picture of viral encephalitides.

Dr. Delp: About seven weeks after his admission here the findings were essentially the same. The third spinal fluid showed 101 white cells, 231 red cells, and spinal fluid protein of 191 mg. per cent. Is that still typical, Mr. Sheafor?

Mr. Sheafor: Changes in spinal fluid protein and cells may be due to spinal taps.

Dr. Delp: Mr. Todd?

Mr. Todd: I believe that changes in spinal fluid protein are associated with the disease.

Dr. Delp: Mr. Wright?

Mr. Wright: There was probably increased permeability of choroid plexus toward the end that would account for the increase in protein.

Dr. Delp: Do you believe that the connection between the onset, the initial signs, and the termination of the illness is consistent?

Mr. Wright: It is not inconsistent with a number of viral encephalitides that have been reported in the literature.

Dr. Delp: What is your second diagnosis, Mr. Settle?

Mr. Settle: I could not rule out the various chronic meningitides that were mentioned.

Dr. Delp: What are the signs of chronic meningitides?

Mr. Settle: There is increased protein in the spinal fluid, and the sugar is normal.

Dr. Delp: The protein was 35 mg. per cent. Is that increased?

Mr. Settle: No, but there may have been other signs which could have been consistent with meningeal irritation?

Dr. Delp: Did he have any signs of meningeal irritation?

Mr. Settle: He complained of some stiffness of his neck.

Dr. Delp: Mr. Sheafor?

Mr. Sheafor: I cannot definitely exclude a diffuse infiltrative neoplastic disease such as a gliomatosis.

Dr. Delp: What is your next best diagnosis, Mr. Stucky?

Mr. Stucky: Glioblastoma multiforme.

Dr. Delp: Mr. Todd?

Mr. Todd: Glioblastoma multiforme.

Dr. Delp: Mrs. Siegel?

Mrs. Siegel: His course and spinal fluid findings were not incompatible with a brain abscess; too, there were no localizing signs.

Dr. Delp: Since the patient did not have a stiff neck, and there was no elevation of protein, what

other signs of meningitis should he have shown?

Mrs. Siegel: There was no positive Kernig's sign and no meningismus, but his course was compatible with meningitis.

Dr. Delp: Do you believe that he had two illnesses?

Mrs. Siegel: No, I do not.

Dr. Delp: Mr. Wright, do you believe that the various anticonvulsants and antibiotics which he received could have had some bearing on his illness?

Mr. Wright: No.

Dr. Delp: Mrs. Siegel?

Mrs. Siegel: They would have decreased the tendency toward convulsions.

Dr. Delp: Mr. Settle, in your opinion did the patient die of encephalitis? Was that the immediate cause of death?

Mr. Settle: Yes, I believe he did die of encephalitis. No part of the central nervous system is exempt from being affected by encephalitis, and there could have been a diffuse involvement.

Dr. Delp: Mr. Sheafor?

Mr. Sheafor: I believe it was encephalitis.

Dr. Delp: Mrs. Siegel, do you believe he died *of* encephalitis or *with* encephalitis? What was the immediate cause of death?

Mrs. Siegel: I believe he died of hypothalamic failure.

Dr. Delp: How do you explain the patient's fever? Is it consistent with your diagnosis?

Mrs. Siegel: Yes, it is; I believe that this is a fairly flat fever course.

Dr. Delp: I would say that 104 degrees is a high fever.

Mrs. Siegel: It could be a simple fever, a hypothalamic fever.

Dr. Delp: What is your opinion of this virus, Mr. Wright?

Mr. Wright: Some recent literature was concerned with 38 cases of nuclear inclusion viral encephalitis in seven of which herpes simplex was isolated.

Dr. Delp: How many were 55 years of age, and how long did they live?

Mr. Wright: All were adult patients; some lived for three and one-half months, some lived for seven weeks, but most of them lived only for two or three days.

Dr. Delp: Thank you. We will now have the pathologist's report.

Pathological Report

Dr. J. K. Frenkel (pathologist): The brain was moderately edematous and weighed 1470 gm. A pressure cone was present on the right cerebellar tonsil. There was evidence of meningitis and perivascular cuffing as shown in Figure 3. There was also inflammation of the cortex, a loss of staining density and

Figure 3. Inflammation of meninges and necrosis of neurons in the cortex with edema, perivascular inflammation. H and E. 50×.

frank infarction. We see hyperemia and perivascular leukocytic infiltration, and numerous phagocytes accompany neuronal cells with intranuclear inclusions *(Figure 4)*.

This is an example of encephalitis due to *Herpesvirus hominis* which more commonly produces recurrent attacks of fever blisters. The question arises as to whether this was the primary infection of our patient at 55 years of age or whether it was a recurrent infection, which for one reason or another extended into the central nervous system. There was no evidence of recent gingivostomatitis. Statistically speaking, most adults have antibodies. Because it has been shown in animals that herpes virus can remain latent and then be precipitated into encephalitis by anaphylactic shock, I believe that this patient's disease, too, could have been the result of latent herpes simplex infection. Some unknown insult or modifying influence resulted in extension of the virus infection into the brain, giving rise to many small foci which gradually increased in size. A review of the literature shows that the clinical course is commonly slow, usually from four to six weeks, although occasionally death occurs much more quickly.

A number of oligodendroglia appear in the white matter with intranuclear inclusion or chromatin disturbances *(Figure 5)*. Some areas of gray matter show

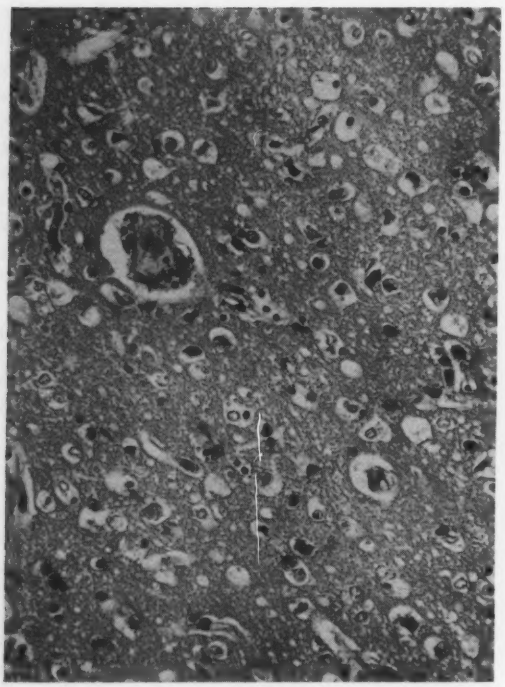

Figure 4. Necrosis of individual neurons, intranuclear inclusions, mainly in astrocytes, edema and perivascular inflammation. H and E. 200×.

numerous neurons and glial cells with inclusions *(Figure 4)*. Cases have been described in which herpes virus has been isolated without any inclusions present. The intense necrosis depends on the occlusion of vessels, and in some areas the amount of debris gives rise to a marked phagocytic reaction. A number of glial cells show mitotic figures which, in my experience, is rare.

Most of the lesions were in the cortex, in the gray matter and subjacent white matter. The patient had signs referable to fifth nerve irritation and to other cranial nerve irritations. The nucleus pigmentosis pontis and the adjacent part of the fifth nerve motor nucleus showed marked inflammatory involvement.

Along the pons were small areas of glial nodules and neuronal degeneration in the nucleus of the vagus. Glial nodules with intranuclear inclusion were present in the reticular substance of the medulla, and perhaps had some bearing on the patient's somnolence.

The caudal medulla showed changes in the Nissl substance of cells, indicating without definite inclusion that these cells too were involved.

Part of the cerebellar folia were plainly infarcted. All of the small neurons were degenerated, and there were infarcts without any inflammation.

Thrombi having the appearance of fibrinoid material were fairly numerous in some areas of the brain while not in others. In an area of the hypothalamus, occlusion of a small vessel was seen associated with a small area of infarction, and tentatively this type of thrombosis may have been the cause of the many cerebral infarcts.

There was aspiration pneumonia with patchy atelectasis. The patient was slightly dehydrated, and there was inspissation of mucus in the pancreas.

Through the efforts of Dr. Herbert A. Wenner, research professor of pediatrics, and Miss Marjorie Soergel, research assistant, Virus Research Section, this virus has been isolated and the identity of the virus proven by neutralization tests, using Keown antiherpes HF serum. Employing monkey kidney cell cultures, the virus may produce focal lesions in solid sheets of cells. The virus enters the cells, multiplies and sometimes produces inclusions in the nucleus *(Figures 6 and 7)*. The cells round up, detach from the glass, and subsequently die. The focal nature of lesions in the brain, in tissue cultures and in the skin, suggests that the virus travels from cell to adjacent cell. Tissue culture not only offers a way of identifying the virus but also permits the performance of studies which show that this virus spreads slowly even in the presence of antibody, perhaps explaining why the disease progressed so slowly in this patient. Unfortunately no serum specimen was available postmortem to test for the actual presence of such antibody.

If virus is deposited on the chorioallantoic membrane of the chick embryo many small necrotic foci result, so-called "pocks" which likewise provide a sig-

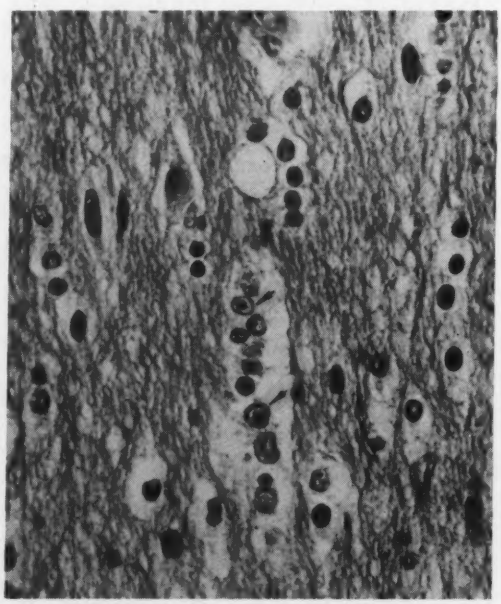

Figure 5. Intranuclear inclusions (arrow) in oligodendroglia of white matter. H and E. 500×.

nificant aid in identifying the virus. Mice can be infected with the virus by intracerebral inocculation. Intranuclear inclusions and focal areas of neuronal degeneration are seen.

We have seen the virus grow and where it grows. Now, how does it produce inclusions? Dr. Councilman Morgan and his colleagues[4] with the aid of the electron microscope have made a study of this in

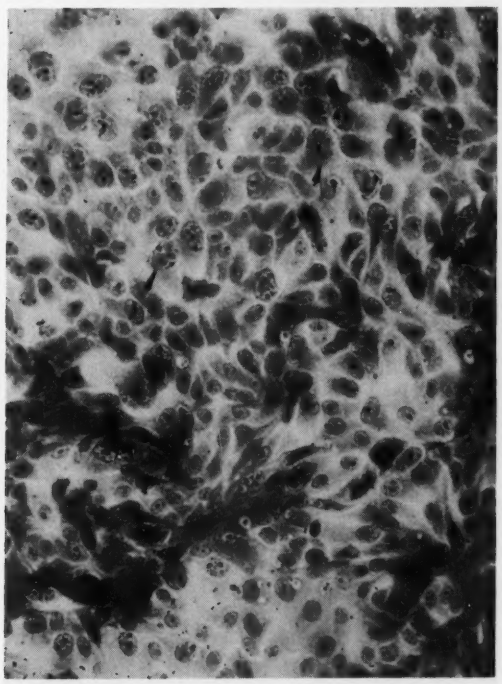

Figure 6. Intranuclear inclusions in monkey kidney cell culture. H and E. 200×.

detail, and all of the evidence points toward the fact that the virus is produced in the nucleus as a spherical body surrounded by a single membrane *(Figures 8 and 9)*. Bits of nuclear membrane are pinched off as the virus exits *(Figure 10)*, and the virus particles appear in the cytoplasm covered by two membranes *(Figure 11)*. Virus infected cells can survive for several days, and for a while the nucleus secretes herpes virus. Many other viruses will kill the cells quickly. For example, mice infected with western equine encephalitis virus usually die within two or three days, whereas if infected with herpes they may survive for a week or sometimes longer.

What we recognize as a cell with an inclusion is a nucleus which is disintegrated. Sometimes a matrix is left with a few virus particles. The actual virus secretory activity of the nucleus does not produce an inclusion body recognizable by light microscopy. A regular inclusion body becomes apparent only when

Figure 7. Intranuclear inclusions in monkey kidney cell culture. The smallest nuclei are of normal appearance; infected nuclei show margination of chromatin and the appearance of a homogenous central intranuclear inclusion (arrow). H and E. 500×.

the cell is more or less exhausted, dead or dying.

In regard to the prolonged course of the disease, the virus appears to enter into some of the neurons and oligodendroglial cells near the surface of the cortex, and the infection smoulders along presumably

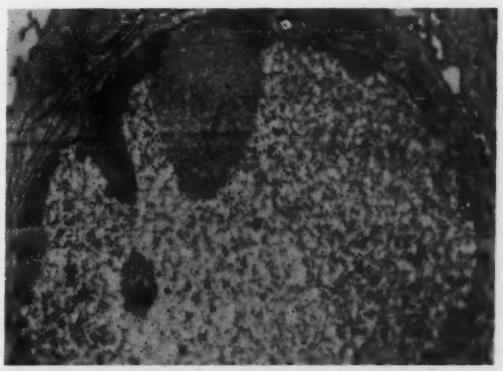

Figure 8. Part of the nucleus of a human cell grown in tissue culture. The chromatin is marginated and an aggregate of small regular granules is seen near the top. ×10,000. (From Morgan *et al.*, reference No. 4. Courtesy of Councilman Morgan, M.D. and The Rockefeller Institute Press.)

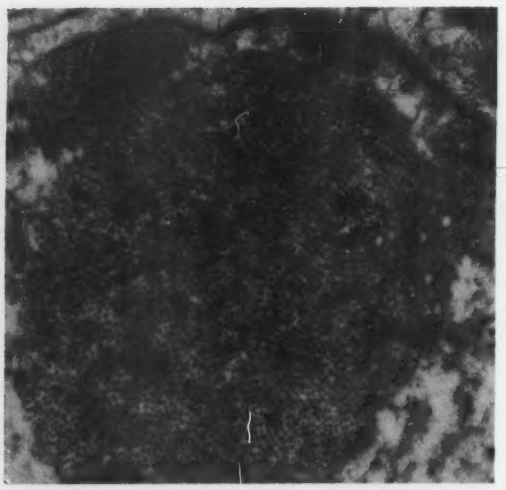

Figure 9. The granular aggregate in Figure 8 is sectioned at a slightly different level. The granules of developing herpes virus are nearly uniform in size and occasionally form short rows. Scattered among the granules are viral particles with an internal body and a single limiting membrane. ×40,000. (From Morgan *et al.*, reference No. 4. Courtesy of Councilman Morgan, M.D. and The Rockefeller Institute Press.)

retarded by the presence of acquired immunity which, although inadequate in the central nervous system, apparently prevented infection of the mucous membranes or, at least, recurrent infection in our patient. The increase in cerebrospinal fluid pleocytosis can be explained by the increasing infarction.

I believe the patient died from the multiple infarcts as well as from the irritation produced along the brain and brain stem, the pons in particular, and then terminally had the complication of bronchopneumonia. Coliform bacteria and staphylococci were isolated from the blood and the pleural fluid. Surprisingly, however, none were isolated from the lung. No definite bacteria were found in the lung sections, and the polymorphonuclears were the only indication of infection.

Dr. Delp: Thank you, Dr. Frenkel. I was hoping that the students would say that the patient had bronchopneumonia. Dr. Youmans, may we have your comments, please?

Dr. Ronald A. Youmans (instructor in medicine): Our case is somewhat vague as presented on the protocol, and it was just as vague clinically. However, if a 55-year-old man were to come into my office complaining that he had had a seizure but that he otherwise felt well, and, furthermore, if he acted well and had a negative neurological examination and negative spinal fluid, I would be inclined to start him on anti-convulsants with the comment that "this seizure may be the only one you will ever have."

So far as anyone knows there is no adequate explanation for these so-called idiopathic seizures which have their onset in middle age. Because of the lack of neurological findings these seizures are probably not significant. Most of them prove to be minor vascular accidents, and another seizure may never occur. It is important, however, that these patients are started on anti-convulsants, and they should be followed for at least three years to be certain that they remain neurologically negative. If neurologic signs of significance should develop one is obliged to do arteriograms and an air study and aggressively pursue a diagnosis of brain tumor.

When we saw the patient during the last eight days of his life it was obvious that he had encephalitis. A high fever with progressive somnolence made the diagnosis reasonably certain. The problem still remained, however, whether encephalitis was all that he had, or, considering his two-year history of clumsiness of his hands, whether there might be a meningioma

Figure 10. A collection of granules and viral particles in crystalline pattern are shown within a nuclear protrusion of the cell. A row of virus particles lies adjacent to the nuclear membrane which is reduplicated. At the top, two intranuclear particles possess triple membranes. ×44,000. (From Morgan *et al.*, reference No. 4. Courtesy of Councilman Morgan, M.D. and The Rockefeller Institute Press.)

or, possibly, another tumor of six-months' duration. Although the encephalitis was there we still did arteriograms. Glioblastoma is the only tumor that characteristically manifests an intermittent fever of one-half to one degree. A sustained fever of 104 degrees is not compatible with the diagnosis of that tumor. I believe that herpes virus is present everywhere all of the time. Dr. Frenkel will probably agree with me that herpes virus is not easily cultured or easily isolated. It probably is not often isolated even when it is present. The patient may have had herpes virus for years. I suspect that most of us have it or have had it.

Apparently something else happened to the patient during the last two weeks of his life which was catastrophic and allowed the virus to become rampant.

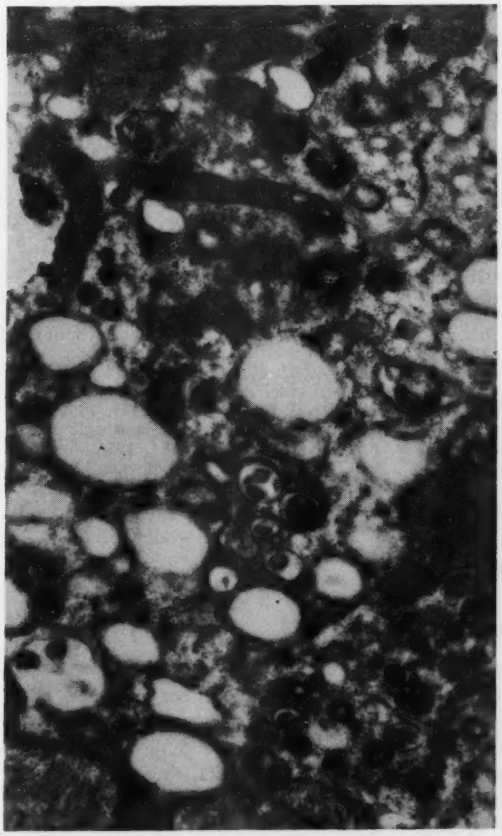

Figure 11. Cytoplasm of a human cell containing herpes virus particles the majority of which lie within vacuoles. The process of viral extrusion from the nucleus can be seen at the lower border where there is reduplication of the nuclear membrane forming sacs enclosing virus particles with two membranes. Formation of these sacs result in liberation of virus without disruption of either nuclear or cytoplasmic membranes. (From Morgan *et al.*, reference No. 4. Courtesy of Councilman Morgan, M.D. and The Rockefeller Institute Press.)

It may have been a co-infection with a second virus, a change in his allergic state, a depletion of his immunity system or trauma—one can postulate indefinitely. Perhaps there was a change in his general allergy state, or he may have developed hay fever at that time of the year. Many things can cause a virus to become rampant. Interesting studies have been made in connection with ECHO and Coxsackie infections in which neither virus alone is markedly virulent, but co-infection with the two presents a dramatic picture not resembling either of the single infections alone. There is no reason, however, to believe that herpes is anything except a single virus infection.

Dr. Delp: Thank you. May we have your comments, Dr. Wenner?

Dr. Wenner: It is not always true that herpes simplex is a chronic disease, particularly when it involves the central nervous system. The cases that I have seen were acute, and the patients died within a week or ten days. Dr. Youmans stated that herpes simplex floats around quite generally and that everyone has it. I believe that is an assumption. It is true, however, that herpes simplex can be isolated from the mouths of many individuals. There is the concept, not a proven one, that herpes simplex is latent in the tissues of human beings, and that it could flare up at almost any time. That concept is based entirely upon clinical evidence which is good, but, in my opinion, it is only a concept. I am somewhat reluctant to believe that masked viruses which perhaps lie in the central nervous system might suddenly flare up. I believe that most of the viruses that reach the central nervous system come from elsewhere by inroads, either vascular or neuronal, rather than being touched off by any other insult to the brain tissue that might exist.

As I heard the history of the patient I suspected that he had two illnesses. In the first place, how could he have had convulsions and still feel perfectly well? Also, how could he have had yet another convulsion and still have a normal spinal fluid? I do not understand how he could have had all of these changes in his brain until his terminal event. I believe that his terminal event was acute encephalitis, but that it was a secondary feature.

Dr. Delp: Thank you. Dr. Williamson, perhaps you can enlighten us on what seems to be a lack of proper correlation between the inception of the patient's illness and the termination.

Dr. William P. Williamson (neurosurgeon): It was the surgeon's obligation to rule out brain abscess or brain tumor. Localization of the lesion could not be well placed in any single area. It seemed that the patient either had widespread brain stem disease, as exemplified by the initial appearance of bulbar speech and profound stupor, or bilateral cerebral disease as evidenced by convulsions alternating from one side to the other. It was not possible anatomically to put his disease in one small area to fit brain abscess or

brain tumor. Secondly, as has been pointed out, the spinal fluid findings were more compatible with viral infection. If the patient had had a brain abscess which had suddenly ruptured into a ventricle to account for his sudden, apoplectic, violent illness, the spinal fluid should have been full of polymorphonuclears, and the spinal fluid should have been low. It was our opinion that he did have a viral encephalitis, but we were puzzled by the convulsion he had had two months previously, and we were worried about a possible smouldering tumor or brain abscess that might have suddenly flared up. For that reason we concurred in doing the arteriograms in order to have the assurance that he was not a surgical problem. I still cannot believe that the patient had encephalitis and that he worked at his regular job for two months with it.

Dr. Frenkel: I would like to add one more thing. I believe that this virus infection started in the brain of an immune host. Immunity potential there is basically lower than in the extraneural viscera. In experimental animals one can sometimes watch chronic encephalitis progress slowly for many months. Having studied chronic toxoplasmosis this has became a familiar concept to me. It appears consistent with this patient's history that lesions slowly spread in the brain and that increasing signs resulted from the cumulative damage.

One clinically important precipitating influence has not been mentioned. In patients with conjunctival and corneal herpes virus the use of eye drops containing adrenal corticoids has resulted in the spread of the infection with involvement of the entire orbit. So we know at least of one factor that can cause herpes virus to flare up in man. Relapse in rabbits where anaphylactic shock gave rise to herpes encephalitis following a latent virus infection is, I believe, well documented by Good and Campbell.[2]

Dr. Delp: Thank you, Dr. Frenkel. In the case today we have seen a brilliant demonstration of a patient who had, at the time of death, herpes virus in the brain. I do not believe that has been demonstrated here previously. I am somewhat skeptical, however, as to whether the patient had herpes virus involving his brain for two months; but then we should be skeptical about many things in medicine.

Pathological Anatomical Diagnosis

Meningoencephalitis, subacute, with virus resembling *Herpesvirus hominis* (Herpes simplex), isolated in tissue culture.

Edema of the brain.

Pressure cone on the right cerebellar tonsil.

Bronchopneumonia, advanced, involving both left lobes and the lower lobe of the right lung.

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4. Morgan, C., Rose, H. M., Holden, M. and Jones, E. P.: Electron microscopic observations on the development of Herpes simplex virus. J. Exp. Med. 110:643, 1959.

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Notice

The committee in charge of the scientific exhibits for the annual meeting of the Kansas Medical Society to be held in Wichita May 1-4, 1961, has made arrangements for the use of good exhibit space immediately adjacent to the meeting area. The Kansas Medical Society has made available $200.00 to be used in cash prizes.

Because of the Kansas Centennial Exposition which will be in Wichita, there will probably be record breaking attendance at the meeting.

Exhibits in the scientific area will be limited to those of a scientific nature. Each member of the Kansas Medical Society is invited to prepare an exhibit. Other interested physicians may also present scientific exhibits, however, if space is a problem members will be given the first priority.

A form on which space may be requested will be mailed to each member of the Kansas Medical Society. Physicians, who are not members, who wish to reserve space should address inquiries to:

Charles M. White, M.D.
3244 East Douglas
Wichita, Kansas

The President's Message

DEAR DOCTOR:

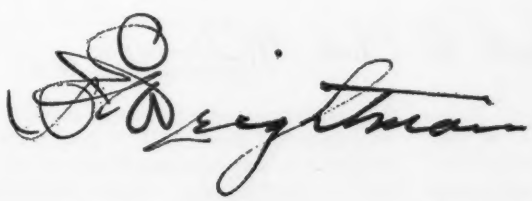
As we inspect this month's JOURNAL, we of the Kansas Medical Society and residents of Kansas can be justly proud of the gradual but steady development of the University of Kansas Medical School. From its meager beginning, through the many years with its many ups and downs from which much was learned, a Medical Center has developed, that is recognized throughout the United States as one of the fine medical schools.

The University of Kansas Medical School was first to recognize the need for doing something to encourage newly graduated medical men to go to rural communities where medical help was so greatly needed. This was done through Preceptorships which have been a great help in alleviating the scarcity of doctors in many communities.

This program is well on its way. The Dean and staff of the Medical School were desirous of giving Kansas physicians an opportunity of taking advantage of Post-graduate work at the Medical School, as well as in circuit courses. This was done and the Postgraduate School has gone ahead in leaps and bounds not only serving the Kansas doctors, but have expanded until doctors throughout the United States are taking advantage of the Postgraduate School.

May I say that all of this development has taken place as a result of a fine and almost superhuman cooperative effort of the staff of the Medical School and, of course, no little credit goes to the Board of Regents, the Kansas Legislature and to the physicians of this state in making all of these things possible.

Yours very truly,



President

Editorial Comment

The JOURNAL is proud to present the 15th Edition of the Annual University of Kansas Issue. This year, again, Dr. Jesse D. Rising of the University of Kansas Medical Center directed the large task of the selection and assembling of material. His success was so outstanding that only a portion of the papers appear in this issue. Others will be published subsequently. We think the 15th University of Kansas School of Medicine Issue is the most significant of this series.

This also marks the first occasion of this event under the direction of a new dean, Dr. C. Arden Miller. The JOURNAL expresses its gratitude to the dean, to Doctor Rising and to each of the faculty contributing articles. We welcome this opportunity for a tangible expression of the close cooperation existing between the medical profession of this state and the University and look forward to continuation of this relationship into the future.

Orville R. Clark, M.D.—Editor

Editorial COMMENT

The Immunization Act of 1961

Before the Kansas Senate, at the time this editorial is written, there is a bill entitled the Immunization Act, Senate Bill 119, submitted by the Committee on Public Health. Its subtitle states succinctly that this is "An act relating to schools, providing for certification of immunization of school children of certain diseases, and providing certain exemption from such requirements."

The act provides that any pupil, entering school for the first time in this state shall, prior to admission, be required to present to appropriate school authorities certification from a licensed physician that he has received immunization against poliomyelitis, smallpox, diphtheria, pertussis, and tetanus, by proper means.

Exemptions to this act are broad enough to satisfy any personal or religious objection, but require the exceptions to be made a matter of record.

This legislation is long overdue. It has been endorsed by the School Health Committee of the Kansas Medical Society and by the Kansas State Teacher's Association. We feel this is worthy legislation and in the great tradition of Kansas leadership in public health. It deserves the support of each member of the Kansas Medical Society.

A.M.A. Membership

Many physicians on starting their practice immediately join their local Medical Society without realizing that they are thus becoming a part of ORGANIZED MEDICINE which is patterned more or less like the American Government.

In joining the local or county medical society the physician automatically becomes a member of the Kansas Medical Society. The purpose of the K.M.S. Constitution begins with this:

"The purpose of this society shall be to federate and bring into one compact organization the entire medical profession of the State of Kansas AND TO UNITE WITH SIMILAR SOCIETIES OF OTHER STATES TO FORM THE AMERICAN MEDICAL ASSOCIATION," etc.

Annually the House of Delegates of the Kansas organization elects and sends delegates to the House of Delegates of the A.M.A., thereby recognizing the fact that the local members not only are eligible to membership but are members in the A.M.A. whose By-Laws provide membership as follows:

"Active membership shall be limited to those members of constituent associations who hold the degree of Doctor of Medicine or Bachelor of Medicine and are entitled to exercise the rights of active membership in their constituent associations, including the right to vote and hold office, etc."

You will note the similarity of the plan to the American Government. A citizen of a county is likewise a citizen of Kansas, and likewise an American Citizen. He is therefore subject to the rules and laws set down by the respective governing bodies elected by the people.

Every active, paid up member of any of the component societies of the Kansas Medical Society is therefore a potential member of the A.M.A. and as such is responsible for any dues voted by a majority of the Delegates. Dues are not set by the officers or any of the active sections of the organization. Please note the similarity of organization procedure since the Senators and Representatives of the Congress, elected by the people have found it necessary to levy an Income Tax upon the people. Frankly, we don't like it but we pay it. By remaining a member of your local society you are therefore liable for the Dues of the A.M.A.

Many years ago annual subscription to the *Journal*

of the A.M.A. was the only financial request. Later Fellowship sections were established, and those desiring that, paid in additional sums or work. Still later a more or less voluntary request for regular contributions was asked of members and still later, regular annual dues were established, which still includes *Journal* subscription. We have recently been informed that the dues will be raised.

A. W. FEGTLY, M.D. *Wichita*

AMENDMENT NO. 1

BY-LAWS CHAPTER V, SECTION 3, Page 14 Amended to read:

Section 3. Each component society having made its annual report and paid its assessments as provided in this Constitution and By-Laws shall elect ONE DELEGATE (1) and ONE ALTERNATE (1) to the House of Delegates for each TWENTY (20) MEMBERS and major fraction thereof, PROVIDED, that each component single county society shall be entitled to at least one delegate and one alternate, and Provided further that each COMPONENT MULTI-COUNTY Society shall be entitled to elect one delegate and one alternate, PLUS one delegate and one alternate for each TEN (10) members and major fraction thereof on the membership roll. It shall be the duty of the secretary of each component society to send a list of the delegates and alternates to the Executive Secretary of this Society at least thirty days prior to each session.

AMENDMENT NO. 2

BY-LAWS CHAPTER VI, Line 13, Page 17 Amend by

Strike out the word "and" before the words "delegate elect" and insert a comma (,) and the words "and an alternate delegate" and further in Line 15 and 16 strike out the words "and alternate delegate to the American Medical Association."

AMENDMENT NO. 3

BY-LAWS CHAPTER VIII, SECTION 15, Page 23 Amend to read:

Section 15. The EXECUTIVE SECRETARY shall notify each component society of each Councilor District at least three months in advance of the annual session at which a new councilor term begins for that district. A meeting of the component societies of a district may be held or a poll taken prior to the annual session to determine a Councilor to be recommended for the new term, and the Councilor shall be elected by a caucus of the delegates present from the several component societies of the district as required by the Constitution (Article IX, Section 3). The results of the caucus shall be reported to the House of Delegates along with the names of the newly elected officers.

AMENDMENT NO. 4

CONSTITUTION ARTICLE IV, SECTION 2, Page 5 Amended to read:

Section 2. The officers of this Society shall be a president, a president-elect, a first vice-president, a second vice-president, a secretary, a treasurer, a Speaker of the House, and a vice speaker of the House. All officers shall be elected by the House of Delegates of this Society for terms of office as are herein provided.

AMENDMENT NO. 5

CONSTITUTION ARTICLE VII, SECTION 1, Page 6 Amended to read:

Section 1. The House of Delegates shall be the primary legislative and governing body of this Society, and shall consist of the duly elected delegates presided over by a Speaker of the House or a Vice Speaker. Other officers, councilors, Chairman of the Editorial Board and Past Presidents of this Society who are not elected delegates shall be EX-OFFICIO members without vote.

AMENDMENT NO. 6

CONSTITUTION ARTICLE IX, SECTION 1, Line 2, Page 7 Amend as follows:

After the word "treasurer" add the words "speaker and vice-speaker of the House of Delegates."

AMENDMENT NO. 7

BY-LAWS CHAPTER V, SECTION 8, No. 2, Page 14 Amend as follows:

Delete the word "President" and insert the words "Speaker of the House" also after No. 5 in the agenda, insert a new No. 6 "Address of the Speaker."

AMENDMENT NO. 8

BY-LAWS CHAPTER V, SECTION 9, No. 2, Page 15 Amend as follows:

Delete the word "President" and insert the word "speaker" also in No. 3 after the word "Treasurer," insert the words "Speaker and Vice-speaker," also in No. 9 amend to read "Installation of new president and speaker."

AMENDMENT NO. 9

BY-LAWS CHAPTER VII, SECTION 1, Line 9, Page 17 Amend as follows:

Delete the words "House of Delegates and the"

AMENDMENT NO. 10

BY-LAWS CHAPTER VII, SECTION 3, Line 3, Page 18 Amend as follows:

Delete the words "the House of Delegates"

AMENDMENT NO. 11

BY-LAWS CHAPTER VII, New SECTION 7 (re-number No. 8), Page 19 Insert

Section 7. The Speaker of the House, elected annually, shall preside at all meetings of the House of Delegates, appoint all reference committees and refer proper resolutions or amendments or subjects to each, and shall perform such duties as custom and parliamentary procedure may require. He shall have the right to vote only in case of a tie. He shall be ex-officio a member of the Council without vote.

The Vice-Speaker shall be prepared to assume the duties of Speaker during his absence or at his request, shall assist the Speaker in the performance of his duties, act in capacity of Sergeant at arms. He shall have the right of vote only when in the capacity of Speaker and only in case of tie vote. In the event of death, resignation or disability of the Speaker he shall automatically succeed to that position for the unexpired term. He shall be an ex-officio member of the Council without vote.

In case of death, resignation or removal of both Speaker and Vice-Speaker, the Council shall appoint either or both for the unexpired term.

AMENDMENT NO. 12

BY LAWS CHAPTER VI, SECTION 1, Line 10, Page 17 Amend as follows:

After the word "treasurer" insert the words "Speaker and Vice-Speaker of the House of Delegates" making lines 9 to 12 read: "each elective office consisting of one or more candidates for the offices of president-elect, first vice-president, secretary, treasurer, speaker and vice-speaker of the House of Delegates, delegate-elect and alternate delegate to the American Medical Association, and three or more candidates for the office of second vice-president."

AMENDMENT NO. 13

BY-LAWS CHAPTER XI, SECTION 3, b & c, Page 27 Amend as follows:

b. Line 2, Delete "president" and insert "Speaker of House of Delegates."

c. Line 2, Delete "president" and insert "Speaker of House of Delegates."

AMENDMENT NO. 14 (recommended by Dr. Thorpe)

BY-LAWS CHAPTER VI, SECTION 1, Pages 16 & 17 Amend as follows:

Amend down to the last word in line 6, to read as follows: Section 1. "A nominating committee of five shall be elected by ballot from the elected delegates at the first meeting of the House of Delegates of each annual session. One member so elected shall be appointed as chairman of the committee by the incoming president of the Society."

AMENDMENT NO. 15

BY-LAWS CHAPTER V, SECTION 1, Last line page 13 and first line page 14 shall be amended to read:

"Notice of such meeting shall be mailed to each component society AT LEAST FIFTEEN (15) DAYS in advance of the date selected and shall state time, place, and purpose of the meeting."

NEW MEMBERS

The JOURNAL *takes this opportunity to welcome these new members into the Kansas Medical Society.*

David H. Davis, M.D.
Larned State Hospital
Larned, Kansas

Joseph H. Depoe, M.D.
Box 248
Douglass, Kansas

Jose L. Ibarra, M.D.
Box 500
Osawatomie, Kansas

James J. Jambor, M.D.
806 Second Avenue
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Larned, Kansas

Robert R. Kitchen, M.D.
Kansas Treatment Center for Children
Third & Oakley
Topeka, Kansas

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416 South Santa Fe
Salina, Kansas

John D. MacCarthy, M.D.
325 Maine Street
Lawrence, Kansas

Aubrey S. McGee, M.D.
Santa Fe Hospital
Topeka, Kansas

W. Lynn McKim, M.D.
616 Niles
Kinsley, Kansas

Eugene M. Malone, M.D.
Hertzler Clinic
Halstead, Kansas

Donald H. Morrison, M.D.
2 Hollylane
Paola, Kansas

John E. Morton, M.D.
Hertzler Clinic
Halstead, Kansas

Gerald K. Palmer, M.D.
St. John's Hospital
Salina, Kansas

Robert D. Parman, M.D.
306 Medical Arts Building
Topeka, Kansas

Jaime Polit, M.D.
Box 500
Osawatomie, Kansas

William E. St. Clair, M.D.
Hartig Clinic
Downs, Kansas

Dale B. Snow, M.D.
1200 Fremont
Manhattan, Kansas

William V. Trekell, M.D.
806 Second Avenue
Dodge City, Kansas

Clarence N. Waters, M.D.
519 United Building
Salina, Kansas

Harry E. Watts, M.D.
107 B West 13th
Hays, Kansas

William N. Wilks, M.D.
Larned State Hospital
Larned, Kansas

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Recent Acquisitions

Allergy

Scott, M. J. Hypnosis in skin and allergic diseases. Thomas. 1960.

Anesthesia

Adriani, J. A. The pharmacology of anesthetic drugs. Thomas. 1960.

Asepsis

Perkins, J. J. Principles and methods of sterilization. Thomas. 1960.

Cancer

Leukemia cutis. Thomas. 1960.

Books and periodicals will be sent anywhere in the state. You pay only the postage, four cents for the first pound and one cent for each additional pound.

Dermatology

Goldsmith, N. You and your skin. Thomas. 1960.

Endocrinology

Pitt-Rivers, R. The chemistry of thyroid diseases. Thomas. 1960.

Gastroenterology

Kleckner, M. S. Cirrhosis of the liver. Thomas. 1960.

Rider, J. A. Disturbances in gastrointestinal motility. Thomas. 1960.

Spencer, R. P. The intestinal tract. Thomas. 1960.

Geriatrics

Burgess, E. W. Aging in western societies. U. of Chicago Press. 1960.

Hemorrhagic Diseases

Ratnoff, O. D. Bleeding syndromes. Thomas. 1960.

Mental Health

Bower, E. M. Early identification of emotionally handicapped children. Thomas. 1960.

Medical Education

Medical Exam Pub. Co. Medical examination review book. Basic Science. 1960.

Nutrition

Bender, A. E. Dictionary of nutrition and food technology. Academic Press. 1960.

Ophthalmology

Haessler, F. H. Eye signs in general disease. Thomas. 1960.

Orthopedics

DePalma, A. F. Clinical orthopaedics. Lippincott. 1960.

Mandarino, M. Chemical osteosynthesis in orthopedic surgery. Thomas. 1960.

Radiation & Radiology

Cronkite, E. P. Radiation injury in man. Thomas. 1960.

Overman, R. T. Radioisotope technique. McGraw-Hill. 1960.

Rheumatic & Arthritic Diseases

Walrad, R. Misrepresentation of arthritis drugs and devices in U. S. Arthritis Foundation. 1960.

Surgery

Moore, F. D. Metabolic care of the surgical patient. Saunders. 1959.

Urology

Flocks, R. H. Radiation therapy of early prostatic cancer. Thomas. 1960.

IN A QUANDARY trying to explain medical care costs in the light of today's over-all rising prices? If so, you'll be interested in the pages from the American Medical Association's new booklet "The ? Cost of Medical Care." The 16-page cartoon pamphlet is being distributed through the Kansas Medical Society. For your copy, just write to the JOURNAL.

Blue Shield

New Service Statements

The new Blue Shield Service Statements introduced late in 1960 on tab cards are now in use on a statewide basis. There has been excellent acceptance of the new claim forms, and we are eager that the new procedures become a smooth operation as soon as possible. Some of the most frequent questions Blue Shield has received from physicians and medical assistants are discussed below and perhaps will be helpful to you.

Q. When should the new forms be used?

A. The new forms may be used immediately even if you have a supply of the old forms. However, the old Service Statements may still be used until your supply is exhausted, or they may be returned to the Topeka office, or discarded.

Q. Can more than one service be reported on the new forms?

A. Yes. Any or all professional services for the same patient may be reported on one card form.

Q. There is no specific place on the form for "accident date" and some of my Service Statements are being returned. Can you clarify this situation?

A. Although the form does not provide a specific section for the accident date, *this information is needed* for services involving accident-x-rays or emergency first aid. The date of the accident should be placed on the Service Statement near the "diagnosis" or the "description" of services.

Q. Was it intended that the new forms be used for intensive medical care or individual consideration cases?

A. In general, the answer is no. Certain needed information for Review Committee cases is not routinely asked for on the new forms. It is much better to use the special forms (34-15 and 34-16) for reporting Intensive Medical Care or Individual Consideration cases.

Q. The new forms have a specific place for procedure code. What is this and is it necessary?

A. The "procedure code" refers to the code number in the Participating Physician's Manual that immediately precedes the description of service. For example, the procedure code for an appendectomy is 3261.

Although it is very helpful to the Blue Shield personnel processing the Service Statement, it it not necessary to report the procedure code. The reporting of services by the procedure code may avoid an incorrect interpretation of services.

Q. What additional information reported from the physician's office would be helpful?

A. The new forms were pre-coded with the physician's name and Blue Shield payment number. In some cases it is necessary for the Blue Shield office to write the physician. Therefore, it would be helpful if the person filling out the Service Statement would type in the physician's address.

Any additional questions concerning the Service Statements should be directed to the Physician Relations Department at the Blue Shield Office at 1133 Topeka Boulevard in Topeka.

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For the 102nd Annual Convention

Wichita, Kansas May 1-3, 1961

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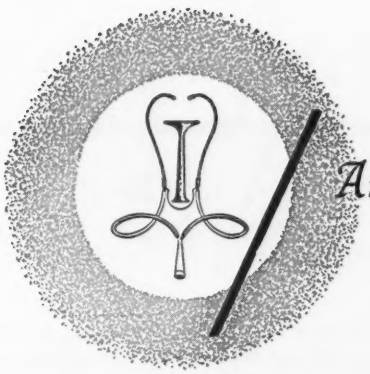

Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the* DOCTOR'S CALENDAR. *Notice of the session is posted in advance to allow the physician time to make preparations.

The Gill Memorial Eye, Ear and Throat Hospital announces the program of the Thirty-Fourth Annual Spring Congress in Ophthalmology, Otolaryngology and allied specialties. The meeting will be held April 3 through April 8, 1961, at the Patrick Henry Hotel, Roanoke, Virginia.

Interested registrants will please write directly to E. G. Gill, M.D., Box 1789, Roanoke, Virginia.

The next scheduled examinations of the American Board of Obstetrics and Gynecology (Part II), oral and clinical for all candidates will be conducted at the Edgewater Beach Hotel, Chicago, Illinois by the entire Board from April 8 through 15, 1961. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates.

Candidates who participated in the Part I Examinations will be notified of their eligibility for the Part II Examinations as soon as possible.

All candidates, eligible for the Part II Examinations, who have applied for the first time in 1960, will be required to submit a duplicate list of the hospital admissions as contained in their application.

The deadline date for the receipt of new and reopened applications for the 1962 examinations is August 1, 1961. Candidates are urged to submit their applications as soon as possible before that time to Robert L. Faulkner, M.D., 2105 Adelbert Road, Cleveland 6, Ohio.

The Annual Midwestern Section Meeting of the Association for Research in Ophthalmology will be held in Wahl Hall Auditorium at the University of Kansas Medical Center on April 29 and 30. Admission is free and any Doctor of Medicine is invited and encouraged to attend. Inquiries regarding the meeting should be directed to Larry L. Calkins, M.D., Department of Ophthalmology, K.U.M.C., Kansas City 12, Kansas.

The Fifth Post-Graduate Course on Fractures and Other Trauma sponsored by the Chicago Committee on Trauma of the American College of Surgeons will be held April 19 through 22, 1961, at the John B. Murphy Memorial Auditorium, Chicago, Illinois.

Interested registrants should address all inquiries to Dr. John J. Fahey, who is Chairman of the Committee on the Post-Graduate Course on Fractures and Other Trauma, 1791 West Howard Street, Chicago 26, Illinois.

Plan to attend the Thirteenth Annual Convention of the International Academy of Proctology at the Drake Hotel, Chicago, Illinois, April 8 through 13, 1961. A seminar on practical technics for office and hospital is being planned. There will be special emphasis on anal and rectal panel presentations, and on newer treatment methods.

Eminent speakers from all parts of the country and abroad will present interesting papers and motion picture demonstrations of their personal techniques.

A Symposium on Pediatric Surgery will be held at the New York University Medical Center, New York City, May 4 through 6, 1961, under the direction of Donald A. Davis, M.D., professor of clinical surgery.

The purpose of this symposium is to present the latest methods and techniques of both diagnosis and surgical management of surgical conditions in the newborn and older children. The program has been planned to attract not only the surgeon but also the pediatrician and the general practitioner. The presentation will be in panel form, with authorities in the field of pediatric surgery taking part.

Information and applications are available by writing to: Office of the Associate Dean, New York University Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

ELDON S. MILLER, M.D.

Dr. Eldon S. Miller, 57, leading Kansas City specialist in internal medicine, died in his office on January 14.

He was born in Smithville, Missouri, on September 24, 1903 and was a graduate of the University of Kansas Medical School. Dr. Miller moved to Kansas City, Kansas, in 1929 and had lived in that area since then.

He served his internship at St. Louis City Hospital and took postgraduate training in internal medicine with an emphasis on diabetes.

He was a member of the Welborn Community Church, a past president of the Wyandotte County Medical Society and the Diabetes Association of Greater Kansas City. He was also a member of the American Medical Association.

He is survived by his widow, Mrs. Desma L. Miller, three sons, two brothers, and two sisters.

CHARLES C. HAWKE, M.D.

Dr. Charles C. Hawke, 75, Winfield physician and surgeon, died January 13 in Pasadena, California, after suffering a heart attack earlier in the day. He had gone to Pasadena for a short visit with his sister, Miss Margaret Hawke.

Dr. Hawke was born August 4, 1885, in North Dakota. He was graduated from the University of Minnesota School of Medicine in 1913. After serving as an intern in the Denver City and County Hospital, he went to Winfield in 1914 to practice.

He was a charter member of the Winfield American Legion, a member of the Grace Episcopal Church and had served several terms as city commissioner and mayor.

He is survived by two daughters, four grandchildren, one great grandchild, and one sister.

JOHN D. HILLIARD, M.D.

Dr. John D. Hilliard, 43, of Medicine Lodge, died at the University of Kansas Medical Center on January 22, following a short illness.

He was born on June 28, 1917, in Freeport, Kansas. He was graduated from the Kansas University School of Medicine in 1942. He served in the U. S. Army from 1944 to 1946 and began his practice in Medicine Lodge in 1951.

Dr. Hilliard was a member of the Tri-County Medical Association, the American Medical Association, was president of National Cerebral Palsy of Kansas, and a Fellow of American Academy of General Practice.

Survivors include his wife, Jane; four daughters, Nancy, Mary Jo, Patricia and Barbara of the home; and one brother. He was preceded in death by a son in 1960.

ROSCOE T. NICHOLS, M.D.

Dr. R. T. Nichols, 80, of Hiawatha, died at Fitzsimons General Hospital at Denver on January 22.

He was born in Iowa in 1881 and was graduated from Northwestern University Medical School in 1902.

He was a member of the staff of the Hiawatha Community Hospital, president of the Hiawatha Masonic Temple board, president of Hiawatha United Funds and was serving as Brown County health officer. He was a past member of the Kansas State Board of Health and many other civic and community groups.

Dr. Nichols is survived by two sons, Col. H. D. Nichols, Manhattan, Col. R. T. Nichols, Jr., Houston, Tex.; and one daughter, Miss Alice Nichols, New York City.

JAMES A. SIMPSON, M.D.

Dr. J. A. Simpson, 79, Salina physician and obstetrician, died on January 18 at St. John's Hospital following a lengthy illness.

He was born September 24, 1881, in Modoc, Illinois. He was a member of the Roman Catholic Church, a member of the Knights of Columbus and was a charter member of the Salina Kiwanis Club.

Dr. Simpson moved to Salina in 1905 after he was graduated from the American Medical College at St. Louis. He celebrated his 50th year in medicine in May, 1955, and retired in 1958 to devote his time to his hobbies.

Survivors are his widow, Gertrude, two sons, one daughter, a brother, two sisters, 17 grandchildren, and one great-grandchild.

Personalities—IN KANSAS MEDICINE

In the January, 1961, meeting of the Republic County Medical Society, the following officers were elected: **Herbert D. Doubek, M.D.,** Belleville, President and **Perry Hunsley, M.D.,** Belleville, Secretary-Treasurer.

Dr. Zane R. Boyd, Wichita, was one of 46 physicians who recently attended a two-day postgraduate course in obstetrics and gynecology at the University of Nebraska College of Medicine, Omaha.

Drs. Jack Tiller and **Larry E. Vin Zant,** Wichita, were among those attending the Sectional meeting of the American College of Surgeons in Mexico City, Mexico, January 23-26.

The Northwest Kansas Medical Society had its postgraduate course at Colby on February 1. Doctors attending were **Dr. E. F. Steichen,** Leonora; **Dr. H. S. Bennie,** Almena; **Dr. Walter Furst,** Norton; and **Drs. Robert Long, F. D. Kennedy, A. E. Cooper** all of Norton.

Dr. Henry T. Gray attended the American Academy of Dermatology and Syphilogy in Chicago, December 3-8. He presented a paper and showed slides on "Gingivitis and Other Dermatosis with Pregnancy."

Dr. C. T. Hagan, Wichita, who began his internship at St. Francis Hospital 17 years ago, was elected recently to the presidency of the hospital's medical staff.

J. Gordon Claypool, M.D., Howard, has been notified that he has been made a Fellow of the American College of Physicians. His fellowship will be conferred at the next annual meeting of the American College of Physicians in May of this year at Miami, Florida.

Dr. B. M. Matassarin attended the Ninth Postgraduate Course in "Diabetes and Basic Metabolic Problems" (American Diabetes Association) at Louisiana State University School of Medicine at New Orleans, January 18-20.

The third in a series of six postgraduate symposiums was presented in Concordia by the University of Kansas School of Medicine faculty on January 31.

Doctors appearing on the program were: **Dr. Antoni M. Diehl,** Associate Professor of Pediatrics, who spoke on "Congestive Heart Failure in Children"; **Dr. Marvin Dunn,** Associate in Medicine, "Physiological Factors in Peripheral Vascular Disease" and "Pseudoinfarction Syndromes"; **Dr. Creighton Hardin,** Associate Professor of Surgery, "Surgical (Renal Artery) Treatment of Hypertension" and "Management of Acute and Chronic Deep Thrombophlebitis" and Dr. Bernard Klionsky, Assistant Professor of Pathology.

Drs. H. O. Anderson, Ward A. McClanahan, and **H. O. Marsh,** Wichita, were among those attending the American Academy of Orthopedic Surgeons Meeting in Miami Beach, January 8-13.

Dr. Robert E. Pfuetze, Topeka, was installed as president of the medical staff of St. Francis Hospital on January 23. Other officers installed are: **Dr. W. L. Beller,** Topeka, vice president, and **Dr. G. W. Nice,** Topeka, secretary.

The Kansas Medical Society—1960-1961

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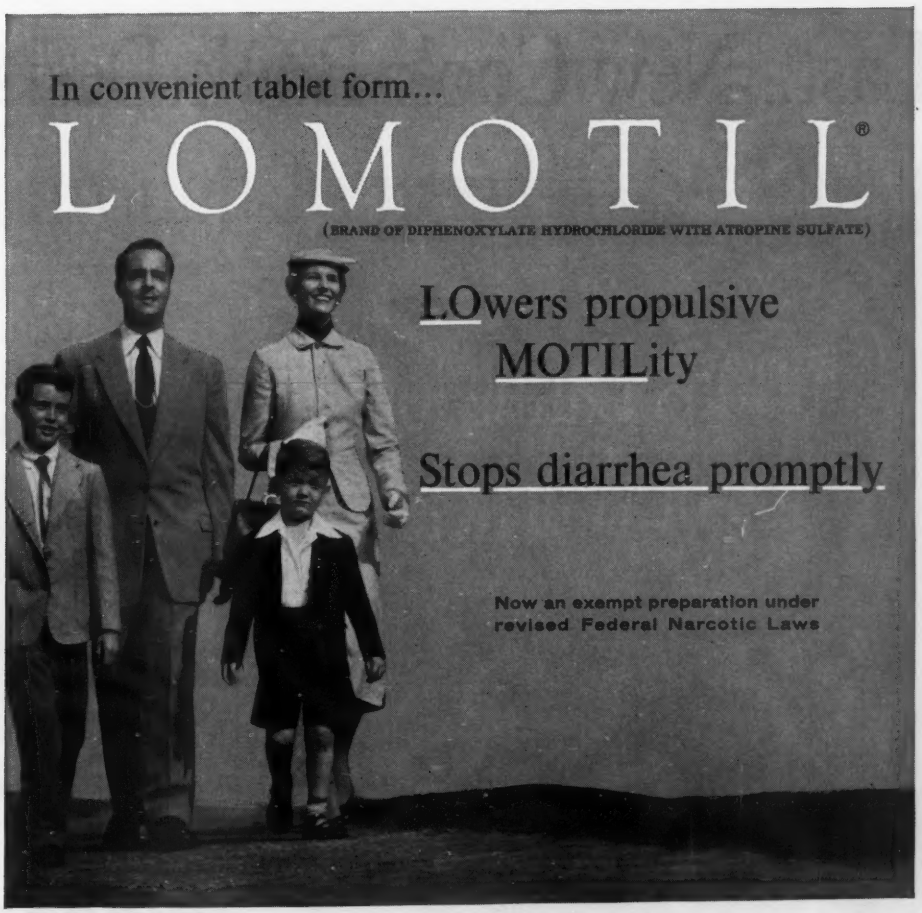
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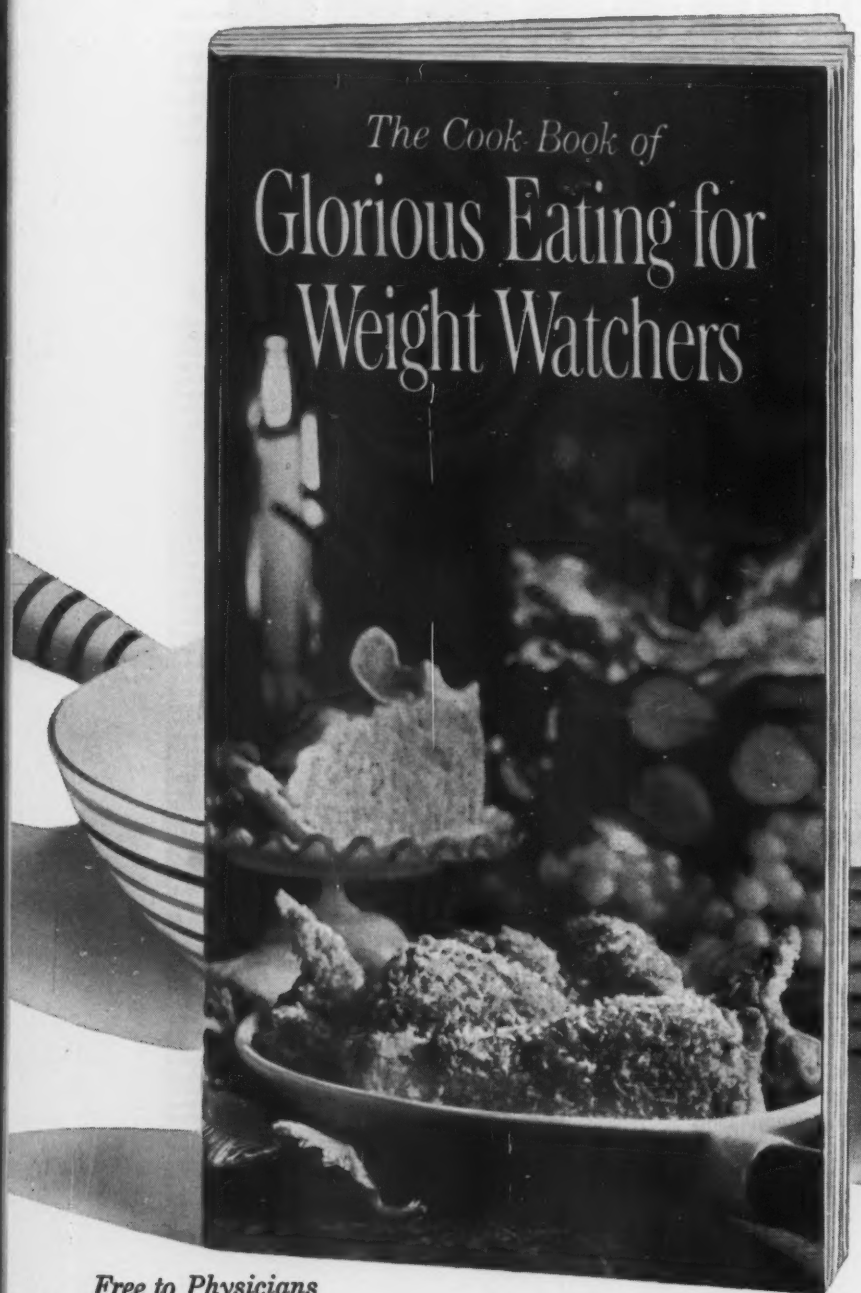

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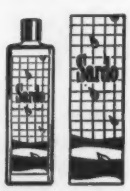
CASES	AFTER SARDO*		
	Excellent	Good	Poor
49 Senile skin	32	13	4
26 Dry Skin in younger patients (diabetes, etc.)	14	11	1
20 Atopic dermatitis	8	10	2
13 Actinic changes	9	4	–
10 Ichthyosis	3	4	3
Skin Conditions	Benefited	No Benefit	
20 Nummular dermatitis	19	1	
10 Neurodermatitis	10	–	



SARDO acts[1,2] to (A) lubricate and soften skin, (B) replenish natural emollient oil, (C) prevent excessive evaporation of essential moisture.

SARDO releases millions of microfine water-miscible globules to provide a soothing suspension which enhances the efficacy of your other therapy.

SARDO is pleasant, convenient, easy to use; non-sticky, non-sensitizing. Bottles of 4, 8 and 16 oz.

1. Weissberg, G.: Clin. Med., June 1960.

2. Spoor, H. J.: N. Y. St. J. Med., Oct. 15, 1958.

*patent pending
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Sardeau, Inc. 75 East 55th Street, New York 22, N. Y.

a new diuretic with an unsurpassed faculty for salt excretion

as salt goes, so goes edema

Robins' new NaClex is a potent, oral, non-mercurial diuretic that reduces edema by applying the basic principle that "increased urine volume and loss of body weight are proportional to and the osmotic consequences of loss of ions."[1] NaClex limits the reabsorption of sodium and chloride ions in the renal proximal tubules with a relative sparing of potassium. The body's homeostatic mechanism responds by increasing the excretion of excess extracellular water. Thus the NaClex-induced removal of salt leads to a reduction of edema.

a unique chemical structure:

NaClex (benzthiazide) is a new molecule which provides a "pronounced increase in diuretic potency"[2] over its antecedent sulfonamide compound. On a practical, clinical basis it is unsurpassed in diuretic potency.

NaClex produces diuresis, weight loss, and symptomatic improvement in edema associated with various conditions. It also has antihypertensive properties and may be used alone in mild hypertension or with other antihypertensive drugs in severer cases.

Available in 50 mg. tablets. Literature on request. Sold in Canada under the tradename EXNA. 1. Pitts, R. F., Am. J. Med., 24:745, 1958. 2. Ford, R. V., Cur. Ther. Res., 2:51, 1960.

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it may become more
than just a cold...

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Only a single prescription provides:

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- **symptomatic relief** of aches, pains, fever, coryza and rhinorrhea associated with upper respiratory infections
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Each TETREX-APC with BRISTAMIN Capsule contains:

ANTIBIOTIC
TETREX (tetracycline phosphate complex equivalent to tetracycline HCl) ..... 125 mg.

ANALGESIC — ANTIPYRETIC
Aspirin ..... 150 mg.
Phenacetin ..... 120 mg.
Caffeine ..... 30 mg.

ANTIHISTAMINIC
BRISTAMIN (phenyltoloxamine citrate) ..... 25 mg.

Dosage: Adults: 2 capsules 3 or 4 times a day for 3 to 5 days.
Children: 6 to 12 yrs.: One-half the adult dose.

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According to a report by the Council on Drugs of the American Medical Association,* antibiotics may be administered for prophylaxis against secondary bacterial invaders in the following types of patients with influenza: pregnant women; debilitated infants; older individuals; patients being treated for other bacterial infections with chemotherapeutic agents, and patients with chronic, nonallergic respiratory disease.

*Council on Drugs, J.A.M.A. 165:58 (Sept. 7) 1957.

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meprobamate (Wallace)

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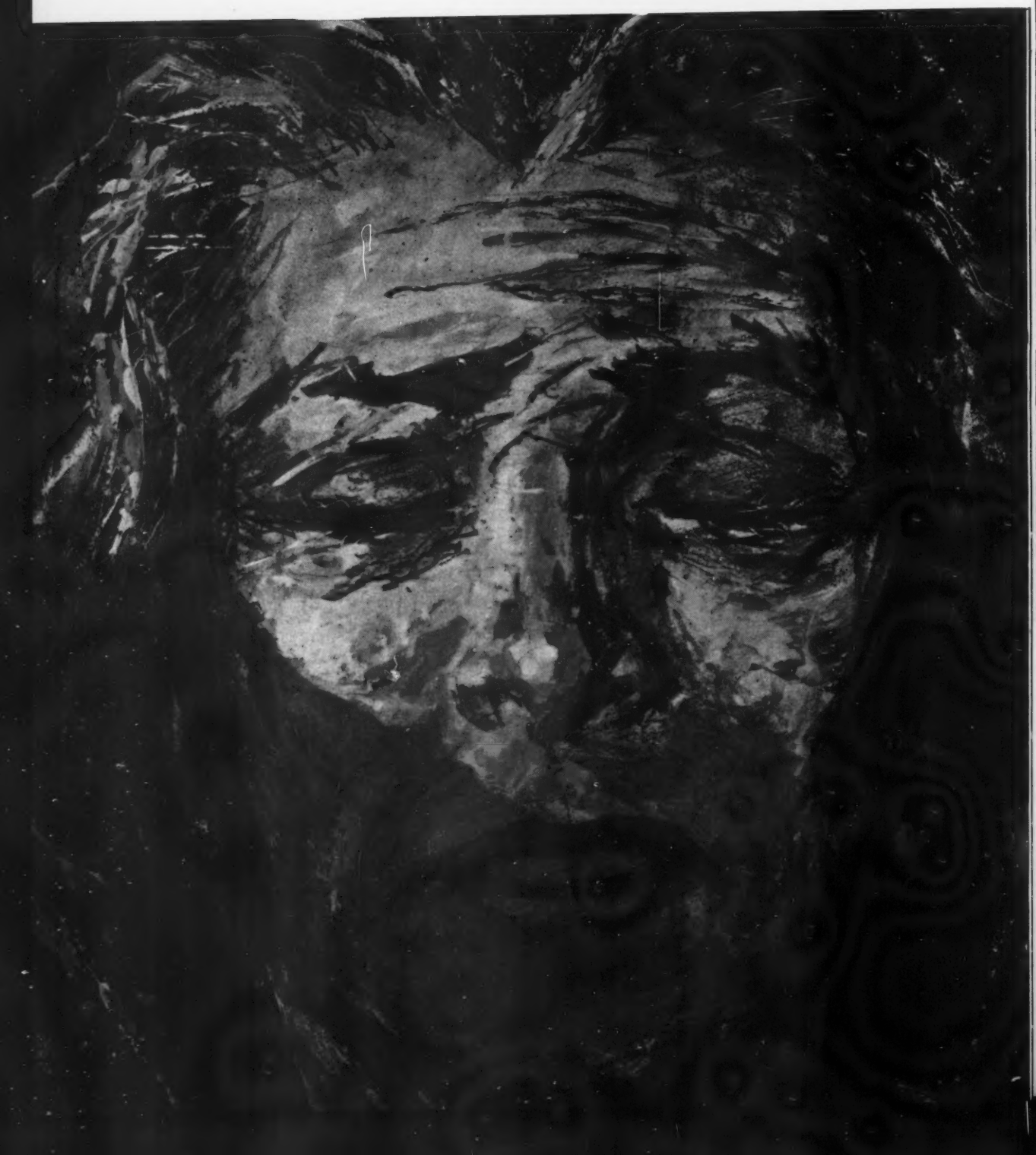

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For neuralgias, dysmenorrhea, upper respiratory distress, postsurgical conditions... new compound kills pain, stops tension, reduces fever—gives more complete relief than other analgesics.

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Supplied: Bottles of 50 apricot-colored, scored tablets.

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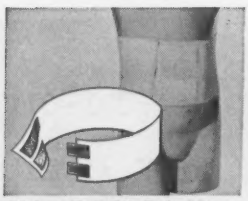

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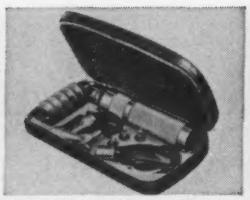

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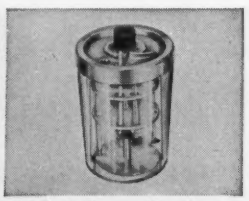

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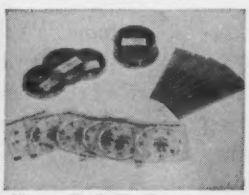

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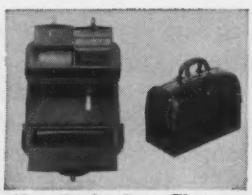

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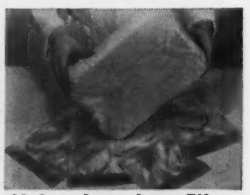

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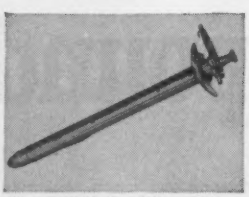

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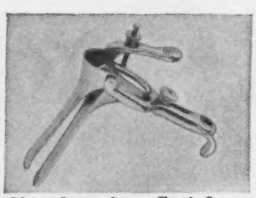

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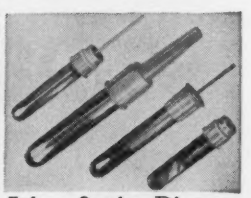

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Efficacy and expanding clinical use are making Naturetin the diuretic of choice in edema and hypertension. It maintains a favorable urinary sodium-potassium excretion ratio, retains a balanced electrolyte pattern, and causes a relatively small increase in the urinary pH.[2] More potent than other diuretics, Naturetin usually provides 18-hour diuretic action with just a single 5 mg. tablet per day — economical, once-a-day dosage for the patient. Naturetin c̄ K — for added protection in those special conditions predisposing to hypokalemia and for patients on long-term therapy.

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References: 1. David, N. A.; Porter, G. A., and Gray, R. H.: Monographs on Therapy 5:60 (Feb.) 1960. 2. Ford, R. V.: Current Therap. Res. 2:92 (Mar.) 1960.

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Soma relieves stiffness —stops pain, too

YOUR CONCERN: Rapid relief from pain for your patient. Get him back to his normal activity, fast!

HOW SOMA HELPS: Soma provides direct pain relief while it relaxes muscle spasm.

YOUR RESULTS: With pain relieved, stiffness gone, your patient is soon restored to full activity—often in days instead of weeks.

Kestler reports in controlled study: *Average time for restoring patients to full activity: with Soma, 11.5 days; without Soma, 41 days.* (*J.A.M.A. Vol. 172, No. 18, April 30, 1960.*)

Soma is notably safe. Side effects are rare. Drowsiness may occur, but usually only in higher dosages. Soma is available in 350 mg. tablets. **USUAL DOSAGE: 1 TABLET Q.I.D.**

The muscle relaxant with an independent pain-relieving action

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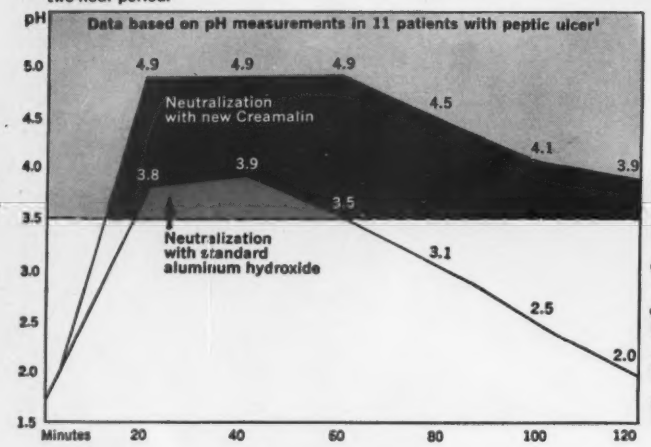

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New CREAMALIN® ANTACID TABLETS

New proof in vivo[1] of the much greater efficacy of new Creamalin tablets over standard aluminum hydroxide has now been obtained. Results of comparative tests on patients with peptic ulcer, measured by an intragastric pH electrode, show that new Creamalin neutralizes acid from 40 to 65 per cent faster than the standard preparation. This neutralization (pH 3.5 or above) is maintained for approximately one hour longer.

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Each new Creamalin antacid tablet contains 320 mg. of specially processed, highly reactive, short polymer dried aluminum hydroxide gel (stabilized with hexitol) with 75 mg. of magnesium hydroxide. Minute particles of the powder offer a vastly increased surface area for quicker and more complete acid neutralization.

Dosage: Gastric hyperacidity — from 2 to 4 tablets as necessary. Peptic ulcer or gastritis — from 2 to 4 tablets every two to four hours. Tablets may be chewed, swallowed whole with water or milk, or allowed to dissolve in the mouth. How supplied: Bottles of 50, 100, 200 and 1000.

1. Data in the files of the Department of Medical Research, Winthrop Laboratories. 2. Hinkel, E. T., Jr.; Fisher, M. P., and Tainter, M. L.: J. Am. Pharm. A. (Scient. Ed.) 48:384, July, 1959.

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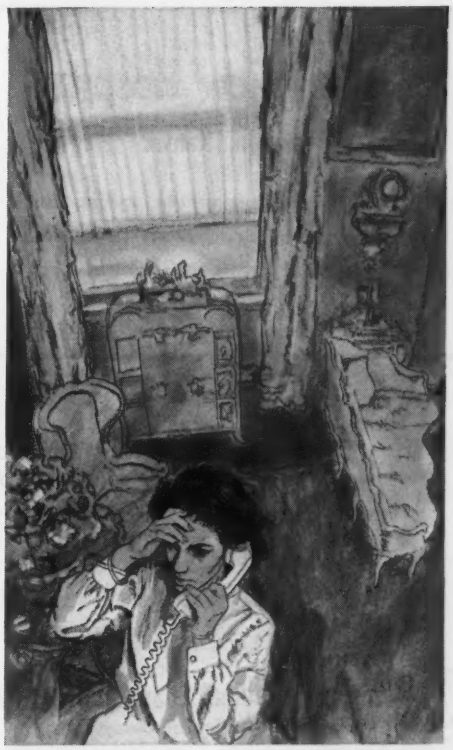

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Take, for instance, the woman in our picture, suffering from a really severe tension headache. Aspirin she has tried, of course; but suppose she's called you and you prescribed Dornwal. What would you expect?

First, let us say you told the druggist to indicate the dosage that our clinical research has shown is useful in these cases — 1 or 2 tablets t.i.d. In all probability, she would experience relief of pain and a general relaxation in less than an hour. If she is doing her housework, she could go on with it, because she wouldn't get sleepy.

Dornwal is one tranquilizer that doesn't make people sleepy. It's a tranquilizer pure and simple. Its effectiveness you will see clearly the next time you encounter a patient given to tension headaches. Try Dornwal and see the results.

Dosage: One or two 200 mg. tablets three times a day. Children, age 6 to 16, one or two 100 mg. tablets two times a day. Administration limited to three months' duration.

Supplied: 200 mg. yellow scored tablets, and 100 mg. pink tablets, each in bottles of 100 and 500.

P.S. For the "Genericist", Dornwal is amphenidone

No absolute contraindications to the use of Dornwal are known. There have been no reports or evidence of habituation, addiction or drug tolerance in animal or clinical studies. Dornwal is relatively free from untoward effects when administered at recommended dosages.

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Triamcinolone has long since proved its unsurpassed efficacy and relative safety in the therapy of *rheumatoid arthritis, inflammatory and allergic dermatoses, bronchial asthma,* and all other conditions in which corticosteroids are indicated. But ARISTOCORT has also opened up new areas of therapy for selected patients who otherwise could not be given corticosteroids. Medicine is now in an era of "special-purpose" steroids.[1]

One outstanding advantage of triamcinolone is that it rarely produces edema and sodium retention.[1,2]

The clinical importance of this property cannot be overemphasized in treating certain types of patients. McGavack and associates[3] have reported the beneficial results with ARISTOCORT in patients with existing or impending cardiac failure, and those with obesity associated with lymphedema. Triamcinolone, in contrast to most other steroids, is not contraindicated in the presence of edema or impending cardiac decompensation.[3]

Hollander[1] points out the superiority of triamcinolone in not causing mental stimulation, increased appetite and weight gain, compared to other steroids which produce these effects in varying degrees. And McGavack,[2] in a comparative tabulation of steroid side effects, indicates that triamcinolone does not produce the increased appetite, insomnia, and psychic disturbances associated with other newer steroids.

ARISTOCORT can thus be advantageous for patients requiring corticosteroids whose appetites should not be stimulated, and for those who are already overweight or should not gain weight. Likewise, ARISTOCORT is suitable for the many patients with emotional and nervous disorders who should not be subjected to psychic stimulation. Furthermore, ARISTOCORT Triamcinolone, in effective doses, showed a low incidence of side reactions and is a steroid of choice for treating the older patient in whom salt and water retention may cause serious damage.[2]

References: 1. Hollander, J. L.: *J.A.M.A.* 172:306 (Jan. 23) 1960. 2. McGavack, T. H.: *Nebraska M. J.* 44:377 (Aug.) 1959. 3. McGavack, T. H.; Kao, K. Y. T.; Leake, D. A.; Bauer, H. G., and Berger, H. E.: *Am. J. M. Sc.* 236:720 (Dec.) 1958.

Precautions: Collateral hormonal effects generally associated with corticosteroids may be induced. These include Cushingoid manifestations and muscle weakness. However, sodium and potassium retention, edema, weight gain, psychic aberration and hypertension are exceedingly rare. Dosage should be individualized and kept at the lowest level needed to control symptoms. It should not exceed 36 mg. daily without potassium supplementation. Drug should not be withdrawn abruptly. Contraindicated in herpes simplex and chicken pox.

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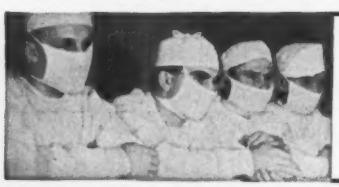

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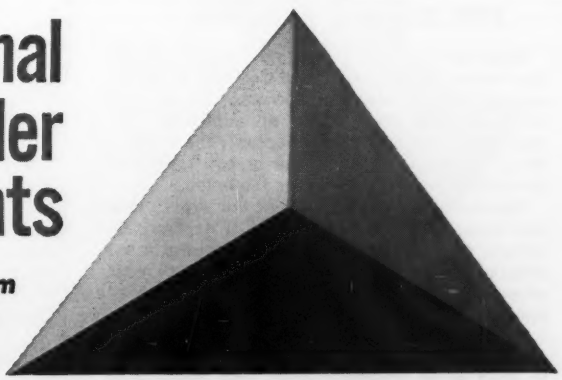

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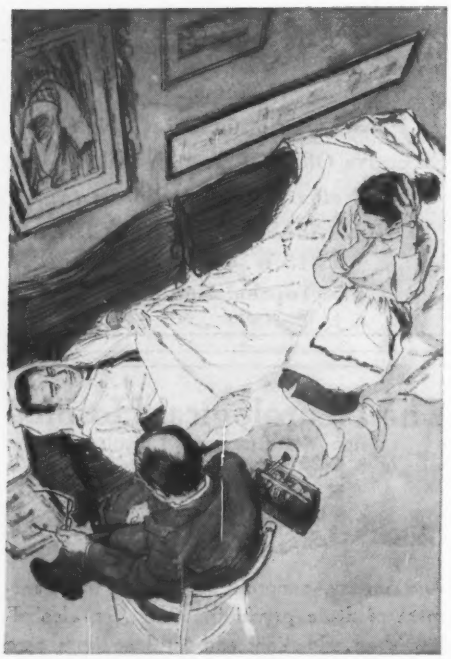

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*Pomeranze, J.: J. New York M. Coll. *1*:32, 1959.

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1. Macy, I. G.; Kelly, H. J., and Sloan, R. E.; with the Consultation of the Committee on Maternal and Child Feeding of the Food and Nutrition Board, National Research Council: The Composition of Milks, Publication 254, National Academy of Sciences and National Research Council, Revised 1953. 2. Brown, G. W.; Tuholski, J. M.; Sauer, L. W.; Minsk, L. D., and Rosenstern, I.: Evaluation of Prepared Milks in Infant Nutrition; Use of the Latin Square Technique, J. Pediat. 56:391 (Mar.) 1960.

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